

COMMITTENTE:



DIREZIONE LAVORI:



APPALTATORE:  
CONSORZIO:



SOCI:



PROGETTAZIONE:  
MANDATARIA:



MANDANTI:



## PROGETTO ESECUTIVO

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

VIADOTTI

VI04 - VIADOTTO UFITA APICE DA KM 16+713 A KM 17+418

RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

APPALTATORE	DIRETTORE DELLA PROGETTAZIONE	PROGETTISTA
Consorzio HIRPINIA AV Il Direttore Tecnico Ing. Vincenzo Moriello 10/06/2020	Il Responsabile integrazione fra le varie prestazioni specialistiche Ing. G. Cassani	<b>Alpina</b> S.p.A. Ing. Paolo Galvanin

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

IF28    01    E    ZZ    CL    VI0403    001    B    -

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n. Elab.:

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PROGETTAZIONE: <u>Mandatario</u> ROCKSOIL S.P.A.	<u>Mandanti</u> NET ENGINEERING S.P.A. ALPINA S.P.A.					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 2 di 354

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<b>PROGETTAZIONE:</b> Mandataria <span style="margin-left: 100px;">Mandanti</span>   						
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<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	<b>COMMESSA</b> <b>IF28</b>	<b>LOTTO</b> <b>01</b>	<b>CODIFICA</b> <b>E ZZ CL</b>	<b>DOCUMENTO</b> <b>VI0403 001</b>	<b>REV.</b> <b>B</b>	<b>FOGLIO</b> <b>4 di 354</b>

## 1 INTRODUZIONE

Nell'ambito della redazione del Progetto Esecutivo della tratta Apice - Orsara del Lotto 1 Apice – Irpinia - 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 VI04 denominato Viadotto Ufita Apice.



Per quanto riguarda i criteri di verifica adottati per le analisi del sistema di fondazione adottato si rimanda al documento IF2801EZZRBVI0003001: Viadotti ferroviari – Relazione sui criteri di calcolo delle fondazioni.

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## 2 Documenti di riferimento e normativa

### 2.1 DOCUMENTI DI RIFERIMENTO

- 1) IF2801EZZRGVI0000001 - Relazione Tecnico-Descrittiva delle Opere Civili - Viadotti VI01, VI02, VI03 e VI04;
- 2) IF2801EZZRBVI0003001 - Relazione sui criteri di calcolo delle fondazioni;
- 3) IF2801EZZRBOC0101001 - Relazione Geotecnica Generale;
- 4) IF2801EZZF6OC0101001 - Profilo geologico - Tratta all'aperto Isca Girasole, da pk 0+000 a 2+705;
- 5) IF2801EZZF6OC0101002 - Profilo geologico - Tratta all'aperto valle Ufita, da pk 4+695 a pk 5+090;
- 6) IF2801EZZF6OC0101003 - Profilo geologico - Tratta all'aperto Castel del Fiego, da pk 9+550 a pk 10+090;
- 7) IF2801EZZF6OC0101004 - Profilo geologico - Tratta all'aperto Iscalonga, da pk 16+610 a pk 18+700;
- 8) IF2801EZZRBOC0301001 - Relazione Sismica generale;
- 9) IF2801EZZP9VI0400000 - Pianta fondazioni e sezioni (tav. 1 di 6)
- 10) IF2801EZZP9VI0400001 - Pianta fondazioni e sezioni (tav. 2 di 6)
- 11) IF2801EZZP9VI0400002 - Pianta fondazioni e sezioni (tav. 3 di 6)
- 12) IF2801EZZP9VI0400003 - Pianta fondazioni e sezioni (tav. 4 di 6)
- 13) IF2801EZZP9VI0400004 - Pianta fondazioni e sezioni (tav. 5 di 6)
- 14) IF2801EZZP9VI0400005 - Pianta fondazioni e sezioni (tav. 6 di 6)
- 15) IF2801EZZP9VI0400006 - Pianta impalcato e prospetto (tav. 1 di 6)
- 16) IF2801EZZP9VI0400007 - Pianta impalcato e prospetto (tav. 2 di 6)
- 17) IF2801EZZP9VI0400008 - Pianta impalcato e prospetto (tav. 3 di 6)
- 18) IF2801EZZP9VI0400009 - Pianta impalcato e prospetto (tav. 4 di 6)
- 19) IF2801EZZP9VI0400010 - Pianta impalcato e prospetto (tav. 5 di 6)
- 20) IF2801EZZP9VI0400011 - Pianta impalcato e prospetto (tav. 6 di 6)
- 21) IF2801EZZCLVI0404001 - Spalla A: Relazione di calcolo strutture in elevazione
- 22) IF2801EZZCLVI0405001 - Pile P1, P2, P21, P22, P23 e P24: Relazione di calcolo strutture in elevazione
- 23) IF2801EZZCLVI0405002 - Pila P3: Relazione di calcolo strutture in elevazione
- 24) IF2801EZZCLVI0405003 - Pila P4 : Relazione di calcolo strutture in elevazione
- 25) IF2801EZZCLVI0405004 - Pila P5: Relazione di calcolo strutture in elevazione
- 26) IF2801EZZCLVI0405005 - Pila P6: Relazione di calcolo strutture in elevazione
- 27) IF2801EZZCLVI0405006 - Pila da P7 a P16: Relazione di calcolo strutture in elevazione
- 28) IF2801EZZCLVI0405007 - Pile da P17 a P20: Relazione di calcolo strutture in elevazione
- 29) IF2801EZZCLVI0404002 - Spalla B: Relazione di calcolo strutture in elevazione

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- 30) IF2801EZZCLVI0403001 - Relazione di calcolo fondazioni spalla A e spalla B
- 31) IF2801EZZCLVI0403002 - Relazione di calcolo fondazioni pile Pile P1, P2, P21, P22,P23 e P24
- 32) IF2801EZZCLVI0403003 - Relazione di calcolo fondazioni pile P3 e P6
- 33) IF2801EZZCLVI0403004 - Relazione di calcolo fondazioni pile P4 e P5
- 34) IF2801EZZCLVI0403007 - Relazione di calcolo fondazioni pile da P7 a P16
- 35) IF2801EZZCLVI0403008 - Relazione di calcolo fondazioni pile da P17 a P20.

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

- 36) Decreto Ministeriale del 14/01/2008: “Approvazione delle Nuove Norma Tecniche per le Costruzioni”, G.U. n.29 del 04/02/2008, Supplemento Ordinario n.30;
- 37) Circolare 01/02/2009, n.617 - Istruzione per l'applicazione delle “Nuove Norme Tecniche per le Costruzioni” di cui al D.M. 14/01/2008;
- 38) DM 06/05/2008 - “Integrazione al DM 14/01/2008 di approvazione delle Nuove Norme Tecniche per le Costruzioni”;
- 39) RFI DTC SI MA IFS 001 A - “Manuale di progettazione delle opere civili”;
- 40) RFI DTC SI SP IFS 001 A - “Capitolato generale tecnico d'appalto delle opere civili”;
- 41) UNI EN 1997-1: Eurocodice 7 - Progettazione Geotecnica - Parte 1: Regole generali;
- 42) UNI EN 1998-5: Eurocodice 8 - Progettazione delle strutture per la resistenza sismica - Parte 5: Fondazioni, strutture di contenimento ed aspetti geotecnici;
- 43) Caltrans. Guidelines on Foundation Loading and Deformation Due to Liquefaction Induced Lateral Spreading. California Department of Transportation, Sacramento, California, 2012;
- 44) JRA (2002) – Specifications for Highway Bridges, JapanRoad Association. Part V: Seismic Design.

## 2.3 **SOFTWARE**

- 45) Lpile, Ensoft Inc, versione 2016, release n. 9;
- 46) Group, Ensoft Inc, versione 2016, release n.10;
- 47) GeoStru, RC-SEC, Calcolo di sezioni in Cemento Armato;
- 48) Pozzi J – Pozzi di fondazione o di stabilizzazione – VOL. 4, T. Collotta 2010.

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### 3 Materiali

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

#### 3.1 ACCIAIO

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

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

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

##### 3.1.2 Profilati e piastre metalliche

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

#### 3.2 CALCESTRUZZO

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



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

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

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







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

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

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- dimensione massima dell'inerte:
 $D_{max} = 25 \text{ mm}$
- copriferro minimo:
 $C_{f,min} \geq 40 \text{ mm}$



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## 4 DESCRIZIONE DELLE FONDAZIONI E STRATIGRAFIA DI PROGETTO

### 4.1 DESCRIZIONE DEL SISTEMA FONDAZIONALE

La fondazione della spalla SPA è costituita da: un plinto a sezione rettangolare di dimensioni 12.0 m x 21.00 m<sup>2</sup> e altezza di 2.0 m, su n.15 pali trivellati di diametro  $\varnothing = 1500$  mm e lunghezza L = 18.0 m.

La fondazione della spalla SPB è costituita da: un plinto a sezione rettangolare di dimensioni 16.5 m x 21.00 m<sup>2</sup> e altezza di 2.0 m; su n.20 pali trivellati di diametro  $\varnothing = 1500$  mm e lunghezza L = 18.0 m.

### 4.2 STRATIGRAFIA DI RIFERIMENTO SPALLA A

In accordo con quanto riportato nella Relazione Geotecnica Generale - ref. 3), la stratigrafia e i parametri geotecnici di riferimento sono riportati nella seguente Tabella 1 unitamente alla portanza limite laterale e di base dei diaframmi.

La quota piano campagna di riferimento è ca. 170,60 m s.l.m.. Si considera la profondità della testa del palo da p.c. di ca. 2.7 m.

SPA STRATIGRAFIA da quota testa palo				PARAMETRI GEOTECNICI DI RIFERIMENTO			PORTANZA LIMITE DEGLI ELEMENTI FONDAZIONE	
DA	A	$\Delta H$	UNITA' DI RIFERIMENTO	$\gamma$	$\varphi$	Cu	qs	qb
[m]	[m]	[m]		[kN/m <sup>3</sup> ]	[°]	[kPa]	[kPa]	[kPa]
0	2.0	2.0	BNA3 alt	19	29		15-20	-
2.0	...7.0	5.0	BNA3	20.5		120	82.2	2323.8
7.0	12.0	5.0	BNA3	20.5		160	94.87	2683.3
12.0	17.0	5.0	BNA3	20.5		200	106.07	3000
17.0	22.0	5.0	BNA3	20.5		240	116.19	3286.3
22.0	27.0	5.0	BNA3	20.5		280	125.5	3400
34027.0	50.0	20.0	BNA3	20.5		300	129.9	3400







Tabella 1 Stratigrafia e parametri geotecnici di riferimento

La falda è assunta coincidente con la quota testa palo.

### 4.1 STRATIGRAFIA DI RIFERIMENTO SPALLA B

In accordo con quanto riportato nella Relazione Geotecnica Generale - ref. 3), la stratigrafia e i parametri geotecnici di riferimento sono riportati nella seguente Tabella 2 unitamente alla portanza limite laterale e di base dei diaframmi.

La quota piano campagna di riferimento è ca. 155.50 m s.l.m.. Si considera la profondità della testa del palo da p.c. di ca. 4.50 m.

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<b>PROGETTAZIONE:</b> Mandataria <span style="margin-left: 100px;">Mandanti</span>   						
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 10 di 354

SPA STRATIGRAFIA da quota testa palo				PARAMETRI GEOTECNICI DI RIFERIMENTO			PORTANZA LIMITE DEGLI ELEMENTI FONDAZIONE	
DA	A	$\Delta H$	UNITA' DI RIFERIMENTO	$\gamma$	$\varphi$	Cu	qs	qb
[m]	[m]	[m]		[kN/m <sup>3</sup> ]	[°]	[kPa]	[kPa]	[kPa]
0	2.5	2.5	ALL-G	19	38		55	-
2.5	5.0	2.5	ALL-S	19	29		45	-
5.0	12.3	7.30	BNA3	20.5		120	82.16	2323.8
12.3	17	4.70	BNA3	20.5	33		95	3056
17	27	10.0	BNA3	20.5		220	111.24	3146.4
27	35.5	8.50	BNA3	20.5	33		167	4300
35.5	50	...	BNA3	20.5		300	129.9	3674

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

La falda è assunta alla profondità di 1.0m dalla quota testa palo.

<b>APPALTATORE:</b> Consorzio <span style="margin-left: 100px;">Soci</span>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>																	
<b>PROGETTAZIONE:</b> Mandataria <span style="margin-left: 100px;">Mandanti</span>   	<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 style="text-align: center;">IF28</td> <td style="text-align: center;">01</td> <td style="text-align: center;">E ZZ CL</td> <td style="text-align: center;">VI0403 001</td> <td style="text-align: center;">B</td> <td style="text-align: center;">11 di 354</td> </tr> </table>						COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF28	01	E ZZ CL	VI0403 001	B	11 di 354
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO													
IF28	01	E ZZ CL	VI0403 001	B	11 di 354													
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>																		

## 5 CRITERI DI VERIFICA

Per ogni stato limite ultimo deve essere rispettata la condizione:

$$Ed \leq Rd;$$

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



Le verifiche sono sviluppate secondo l'approccio 2:

combinazione: A1+M1+R3,

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

Per maggiori dettagli sui criteri di calcolo e verifica si rimanda alla relazione ref. 2).

Per le verifiche a fessurazione si ricorda che sono svolte per condizioni ambientali ordinarie e armature poco sensibili (vedasi § 9.3.1 di ref. 2)).

<b>APPALTATORE:</b> Consorzio <span style="margin-left: 100px;">Soci</span>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <span style="margin-left: 100px;">Mandanti</span>   						
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 12 di 354

## 6 SCARICHI DI FONDAZIONE

Di seguito si esaminano gli scarichi a quota intradosso fondazione della spalla per le combinazioni di carico sismiche (SLV), statiche (SLU) e di esercizio (SLE).

### 6.1 SCARICHI ALLA BASE DEL PLINTO

Nella Figura 6-1 la convenzione dei segni assunta per il calcolo della spalla.

Le convenzioni:

- X: direzione longitudinale impalcato;
- Y: direzione trasversale impalcato;
- Z: direzione verticale (positiva verso l'alto);
- MX: Momento attorno all'asse X;
- MY: Momento attorno all'asse Y;
- MZ: Momento attorno all'asse Z.

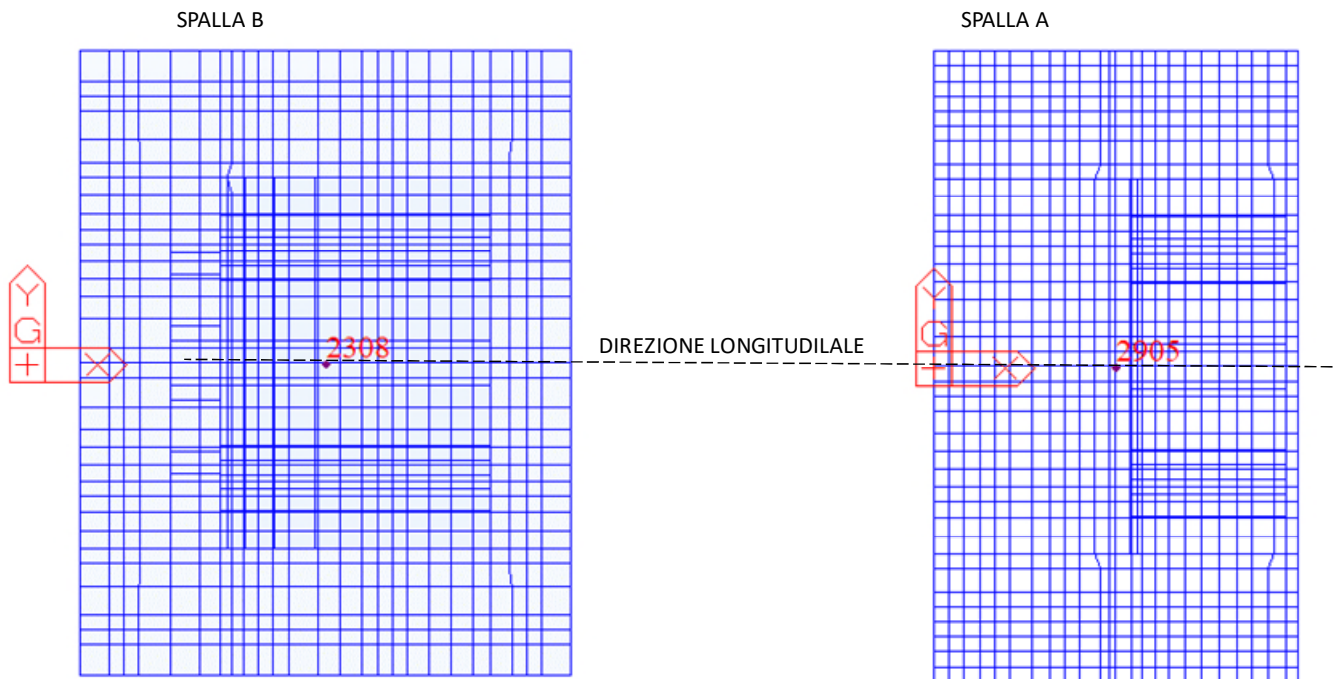




Figura 6-1: Sistema di riferimento proprio delle spalle

APPALTATORE: Consorzio  Soci  	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
PROGETTAZIONE: Mandataria  Mandanti  						
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 13 di 354

## 6.2 SCARICHI SPALLA A

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

Nella seguente Tabella 3 si riportano le combinazioni di carico più gravose agli stati limite ultimi (SLV) in presenza di sisma.

Tali carichi sono stati ottenuti considerando la struttura in elevazione in classe di duttilità B (fattore di struttura  $q=1.5$ ). Per il dimensionamento e le verifiche del sistema fondazione le azioni da considerare sono le resistenze degli elementi strutturali soprastanti, con il limite, in accordo alle NTC 2008 (ref. 36)), che il fattore di amplificazione non superi  $\gamma_{Rd} = 1.1$ .

#### COMB SISMICHE SLV

Node	Load	FX (kN)	FY (kN)	FZ (kN)	MX (kN*m)	MY (kN*m)	MZ (kN*m)
*****	*****	*****	*****	*****	*****	*****	*****
2905	ULS_V_02	<b>10954.2</b>	-79.5	-27741.6	764	42429	25.7
2905	ULS_V_05	<b>-21556.2</b>	-79.5	-27688.8	764	-60307	9.5
2905	ULS_V_09	-3182	<b>14001.6</b>	-27689	-48362	-706	5372
2905	ULS_V_14	-3182	<b>-14160.6</b>	-27689	49891	-706	-5334
2905	ULS_V_21	-8694	-80	<b>-23041.1</b>	761	-20353	16
2905	ULS_V_20	1659	-80	<b>-36372.9</b>	770	18257	19
2905	ULS_V_16	-3182	-14161	-31672	<b>49893</b>	808	-5334
2905	ULS_V_09	-3182	14002	-27689	<b>-48362</b>	-706	5372
2905	ULS_V_03	10954	-80	-31725	767	<b>43944</b>	26
2905	ULS_V_06	-21556	-80	-27689	764	<b>-60308</b>	10
2905	ULS_V_10	-3182	14002	-27689	-48362	-706	<b>5372.3</b>
2905	ULS_V_15	-3182	-14161	-31672	49893	808	<b>-5334.4</b>

Tabella 3: Combinazioni sismiche SLV: azioni agenti a base plinto SPA

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

Nella seguente Tabella 4 si riportano le combinazioni agli stati limite ultimi statici (SLU); i carichi sono amplificati con i coefficienti parziali A1.

#### COMBINAZIONI ULS

Node	Load	FX (kN)	FY (kN)	FZ (kN)	MX (kN*m)	MY (kN*m)	MZ (kN*m)
*****	*****	*****	*****	*****	*****	*****	*****
2905	ULS_20	<b>-1690.9</b>	-731.0	-45027.5	6103.671	7838.9	228.3
2905	ULS_09	<b>-6179.0</b>	-731.0	-44623.0	6103.671	-12857.7	267.1
2905	ULS_53	-5525	<b>-603.2</b>	-41840	3555.746	-4935	119
2905	ULS_02	-5913	<b>-1025.3</b>	-45448	9631.340	-5771	182
2905	ULS_47	-3053	-748	<b>-28827.0</b>	6801.495	378	74
2905	ULS_01	-5913	-1025	<b>-45447.6</b>	9631.340	-5770	182

APPALTATORE: Consorzio  Soci  	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: Mandataria  Mandanti  	<b>RADDOPPIO TRATTA APICE – ORSARA I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 14 di 354

2905 ULS_38	-1957	-1025	-35398	<b>9631.340</b>	7161	163
2905 ULS_05	-5913	-642	-42485	<b>3424.459</b>	-6472	138
2905 ULS_15	-1957	-1025	-45336	9631.340	<b>11819.2</b>	163
2905 ULS_32	-5453	-731	-34191	6103.671	<b>-14481.0</b>	267
2905 ULS_18	-2223	-775	-44370	7724.013	2124	<b>436.2</b>
2905 ULS_45	-3976	-748	-39259	6801.495	1211	<b>74.5</b>

Tabella 4: Combinazioni statiche SLU-A1: azioni agenti a base plinto SPA

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

Nella seguente Tabella 5 si riportano le combinazioni di carico caratteristiche impiegate per gli stati limite di esercizio (SLE).

COMB SLE CARATTERISTICHE

Node	Load	FX (kN)	FY (kN)	FZ (kN)	MX (kN*m)	MY (kN*m)	MZ (kN*m)
*****	*****	*****	*****	*****	*****	*****	*****
2905 CH_20		<b>-1994.3</b>	-493.8	-33146.2	4115.615	2859.7	156.4
2905 CH_09		<b>-4433.8</b>	-493.8	-32526.2	4115.615	-8688.4	183.2
2905 CH_29		-3983	<b>-405.7</b>	-30607	2358.425	-3225	81
2905 CH_02		-4250	<b>-696.8</b>	-33095	6548.490	-3801	125
2905 CH_23		-2915	-499	<b>-28827.0</b>	4534.330	1014	50
2905 CH_15		-2178	-697	<b>-33358.9</b>	6548.490	5605	111
2905 CH_16		-2178	-697	-33359	<b>6548.490</b>	5604	111
2905 CH_05		-4250	-432	-31052	<b>2267.882</b>	-4285	94
2905 CH_15		-2178	-697	-33359	6548.490	<b>5604.8</b>	111
2905 CH_10		-4434	-494	-32526	4115.615	<b>-8688.7</b>	183
2905 CH_18		-2362	-524	-32693	5233.092	-1082	<b>299.8</b>
2905 CH_23		-2915	-499	-28827	4534.330	1014	<b>49.6</b>

Tabella 5: Combinazioni di esercizio SLE: azioni agenti a base plinto SPA

## 6.3 SCARICHI A INTRADOSSO PLINTO - GROUP

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

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

- amplificando le azioni di taglio e i momenti a base pila del coefficiente  $\gamma_{Rd} = 1.1$ ;
- sistema di riferimento codice calcolo Group (Figura 6-2).

APPALTATORE: Consorzio <span style="margin-left: 100px;">Soci</span> 	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
PROGETTAZIONE: Mandataria <span style="margin-left: 100px;">Mandanti</span> 						
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 15 di 354

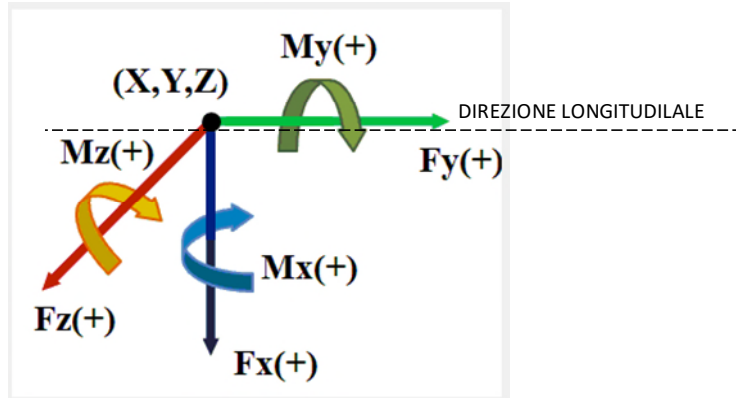


Figura 6-2: Convenzioni di segno Group







NODE	LOAD	VERT	LONG	LONG	TRASV	TRASV	TORC
		FX	FY	MZ	FZ	MY	MX
2905	ULS_V_02	27741.6	12050	-46672.3	87.5	840.6	-28.2
2905	ULS_V_05	27688.8	-23712	66338.1	87.5	840.6	-10.5
2905	ULS_V_09	27688.8	-3500	776.8	-15401.8	-53198.5	-5909.5
2905	ULS_V_14	27688.8	-3500	777.0	15576.7	54879.7	5867.8
2905	ULS_V_21	23041.1	-9563	22388.8	87.5	837.0	-17.7
2905	ULS_V_20	36372.9	1825	-20082.9	87.5	847.3	-21.0
2905	ULS_V_16	31672.5	-3500	-889.0	15576.7	54882.8	5867.8
2905	ULS_V_09	27688.8	-3500	776.8	-15401.8	-53198.5	-5909.5
2905	ULS_V_03	31725.3	12050	-48338.5	87.5	843.7	-28.2
2905	ULS_V_06	27688.8	-23712	66338.4	87.5	840.6	-10.5
2905	ULS_V_10	27688.8	-3500	777.0	-15401.8	-53198.5	-5909.5
2905	ULS_V_15	31672.5	-3500	-889.2	15576.7	54882.8	5867.8

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

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

Nella Tabella 7 si riportano gli scarichi per gli stati limite ultimi statici (SLU), ottenuti considerando sistema di riferimento codice calcolo Group (Figura 6-2).

NODE	LOAD	VERT	LONG	LONG	TRASV	TRASV	TORC
		FX	FY	MZ	FZ	MY	MX
2905	ULS_20	45027.5	-1690.9	-7838.9	731.0	6103.671	-228.3
2905	ULS_09	44623.0	-6179.0	12857.7	731.0	6103.671	-267.1
2905	ULS_53	41839.6	-5525.4	4935.4	603.2	3555.746	-119.2
2905	ULS_02	45447.6	-5912.7	5770.7	1025.3	9631.340	-182.0
2905	ULS_47	28827.0	-3052.8	-378.1	747.9	6801.495	-74.5
2905	ULS_01	45447.6	-5912.7	5770.3	1025.3	9631.340	-182.0

<b>APPALTATORE:</b> Consorzio  Soci  	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria  Mandanti  						
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 16 di 354

2905	ULS_38	35398.3	-1957.1	-7161.5	1025.3	9631.340	-162.6
2905	ULS_05	42484.7	-5912.7	6472.2	641.9	3424.459	-137.9
2905	ULS_15	45335.9	-1957.1	-11819.2	1025.3	9631.340	-162.6
2905	ULS_32	34190.9	-5453.2	14481.0	731.0	6103.671	-267.1
2905	ULS_18	44370.3	-2223.3	-2124.2	775.0	7724.013	-436.2
2905	ULS_45	39259.2	-3976.1	-1210.9	747.9	6801.495	-74.5

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


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

Nella **Tabella 8** si riportano le combinazioni di carico caratteristiche impiegate per gli stati limite di esercizio ottenute considerando sistema di riferimento codice calcolo Group (Figura 6-2).

NODE	LOAD	VERT	LONG	LONG	TRASV	TRASV	TORC
		FX	FY	MZ	FZ	MY	MX
2905	CH_20	33146.2	-1994.3	-2859.7	493.8	4115.615	-156.4
2905	CH_09	32526.2	-4433.8	8688.4	493.8	4115.615	-183.2
2905	CH_29	30606.6	-3983.0	3224.7	405.7	2358.425	-81.2
2905	CH_02	33094.9	-4250.2	3800.9	696.8	6548.490	-124.5
2905	CH_23	28827.0	-2914.6	-1014.1	498.6	4534.330	-49.6
2905	CH_15	33358.9	-2177.9	-5604.8	696.8	6548.490	-111.1
2905	CH_16	33358.9	-2177.9	-5604.4	696.8	6548.490	-111.1
2905	CH_05	31051.5	-4250.2	4284.6	432.4	2267.882	-94.1
2905	CH_15	33358.9	-2177.9	-5604.8	696.8	6548.490	-111.1
2905	CH_10	32526.2	-4433.8	8688.7	493.8	4115.615	-183.2
2905	CH_18	32693.0	-2361.5	1081.5	524.2	5233.092	-299.8
2905	CH_23	28827.0	-2914.6	-1014.1	498.6	4534.330	-49.6

Tabella 8: Combinazioni di esercizio SLE: azioni agenti ad intradosso plinto SPA - Group



APPALTATORE: Consorzio  Soci  	<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
PROGETTAZIONE: Mandataria  Mandanti  						
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 17 di 354

## 6.1 SCARICHI SPALLA B

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

Nella seguente Tabella 9 si riportano le combinazioni di carico più gravose agli stati limite ultimi (SLV) in presenza di sisma.

Tali carichi sono stati ottenuti considerando la struttura in elevazione in classe di duttilità B (fattore di struttura  $q=1.5$ ). Per il dimensionamento e le verifiche del sistema fondazione le azioni da considerare sono le resistenze degli elementi strutturali soprastanti, con il limite, in accordo alle NTC 2008 (ref. 36)), che il fattore di amplificazione non superi  $\gamma_{Rd} = 1.1$ .

COMB SISMICHE SLV

Node	Load	FX (kN)	FY (kN)	FZ (kN)	MX (kN*m)	MY (kN*m)	MZ (kN*m)
*****	*****	*****	*****	*****	*****	*****	*****
2308	ULS_V_01	<b>11971.9</b>	-89.5	-41435.8	1132	17484	326.0
2308	ULS_V_05	<b>-32842.5</b>	-89.5	-41383.0	1132	-174516	270.1
2308	ULS_V_09	-5825	<b>20655.9</b>	-41383	-97102	-53941	-13781
2308	ULS_V_14	-5825	<b>-20834.9</b>	-41383	99365	-53942	14382
2308	ULS_V_22	-13930	-89	<b>-34535.7</b>	1121	-85466	291
2308	ULS_V_19	229	-89	<b>-54152.2</b>	1151	-36189	305
2308	ULS_V_16	-5825	-20835	-47252	<b>99374</b>	-57925	14382
2308	ULS_V_09	-5825	20656	-41383	<b>-97102</b>	-53941	-13781
2308	ULS_V_01	11972	-89	-41436	1132	<b>17484</b>	326
2308	ULS_V_08	-32843	-89	-47252	1141	<b>-178500</b>	270
2308	ULS_V_15	-5825	-20835	-47252	99374	-57925	<b>14381.8</b>
2308	ULS_V_10	-5825	20656	-41383	-97102	-53942	<b>-13781.0</b>

Tabella 9: Combinazioni sismiche SLV: azioni agenti a base plinto SPB

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

Nella seguente Tabella 10 si riportano le combinazioni agli stati limite ultimi statici (SLU); i carichi sono amplificati con i coefficienti parziali A1.

COMBINAZIONI ULS

Node	Load	FX (kN)	FY (kN)	FZ (kN)	MX (kN*m)	MY (kN*m)	MZ (kN*m)
*****	*****	*****	*****	*****	*****	*****	*****
2308	ULS_19	<b>-3790.1</b>	-951.7	-64995.0	8975.768	-74380.9	2818.6
2308	ULS_09	<b>-10750.9</b>	-951.7	-64721.6	8951.881	-116251.8	2887.2
2308	ULS_53	-9697	<b>-820.9</b>	-62121	8219.105	-91779	2231
2308	ULS_02	-10281	<b>-1293.4</b>	-66363	15522.116	-106545	3787
2308	ULS_48	-5560	-1075	<b>-43281.8</b>	11403.459	-51956	2682

APPALTATORE: Consorzio  Soci  	<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
PROGETTAZIONE: Mandataria  Mandanti  						
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 18 di 354

2308	ULS_02	-10281	-1293	<b>-66362.7</b>	15522.116	-106545	3787
2308	ULS_38	-4260	-1293	-51174	<b>15546.003</b>	-61247	3753
2308	ULS_53	-9697	-821	-62121	<b>8219.105</b>	-91779	2231
2308	ULS_47	-5560	-1075	-43282	11403.459	<b>-51954.7</b>	2682
2308	ULS_10	-10751	-952	-64722	8951.881	<b>-116252.9</b>	2887
2308	ULS_23	-8769	-1293	-50791	15546.003	-90003	<b>3786.8</b>
2308	ULS_54	-9697	-821	-62121	8219.105	-91781	<b>2230.6</b>

Tabella 10: Combinazioni statiche SLU-A1: azioni agenti a base plinto SPB

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

Nella seguente Tabella 11 si riportano le combinazioni di carico caratteristiche impiegate per gli stati limite di esercizio (SLE).

COMB SLE CARATTERISTICHE

Node	Load	FX (kN)	FY (kN)	FZ (kN)	MX (kN*m)	MY (kN*m)	MZ (kN*m)
*****	*****	*****	*****	*****	*****	*****	*****
2308	CH_19	<b>-4220.3</b>	-641.5	-47948.6	6010.774	-59515.1	1906.9
2308	CH_10	<b>-7759.8</b>	-641.5	-47328.6	6010.773	-82743.9	1954.2
2308	CH_29	-7033	<b>-551.3</b>	-45535	5505.411	-65865	1501
2308	CH_02	-7435	<b>-877.1</b>	-48460	10541.970	-76049	2575
2308	CH_24	-5422	-716	<b>-43281.8</b>	7579.556	-50905	1788
2308	CH_15	-4545	-877	<b>-48724.4</b>	10541.970	-57457	2551
2308	CH_16	-4545	-877	-48724	<b>10541.970</b>	-57458	2551
2308	CH_29	-7033	-551	-45535	<b>5505.411</b>	-65865	1501
2308	CH_23	-5422	-716	-43282	7579.556	<b>-50903.9</b>	1788
2308	CH_10	-7760	-642	-47329	6010.773	<b>-82743.9</b>	1954
2308	CH_02	-7435	-877	-48460	10541.970	-76049	<b>2574.6</b>
2308	CH_30	-7033	-551	-45535	5505.411	-65867	<b>1501.4</b>



Tabella 11: Combinazioni di esercizio SLE: azioni agenti a base plinto SPB

## 6.2 SCARICHI A INTRADOSSO PLINTO - GROUP

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

Nella Tabella 12 si riportano le combinazioni di carico agli stati limite ultimi (SLV) in presenza dell'azione sismica, ottenute:

- amplificando le azioni di taglio e i momenti a base pila del coefficiente  $\gamma_{Rd} = 1.1$ ;
- sistema di riferimento codice calcolo Group (Figura 6-2).

<b>APPALTATORE:</b> Consorzio  Soci  	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria  Mandanti  	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	COMMESSA IF28    LOTTO 01    CODIFICA E ZZ CL    DOCUMENTO VI0403 001    REV. B    FOGLIO 19 di 354

NODE	LOAD	VERT	LONG	LONG	TRASV	TRASV	TORC
		FX	FY	MZ	FZ	MY	MX
2308	ULS_V_01	41435.8	13169.1	-19231.9	98.4	1244.7	-358.6
2308	ULS_V_05	41383.0	-36126.8	191967.2	98.4	1244.7	-297.1
2308	ULS_V_09	41383.0	-6407.3	59335.1	-22721.5	-106812.1	15159.1
2308	ULS_V_14	41383.0	-6407.3	59335.8	22918.3	109301.4	-15820.0
2308	ULS_V_22	34535.7	-15323.1	94012.9	98.4	1233.0	-320.4
2308	ULS_V_19	54152.2	251.4	39807.7	98.4	1266.3	-335.2
2308	ULS_V_16	47252.1	-6407.3	63717.9	22918.3	109311.4	-15820.0
2308	ULS_V_09	41383.0	-6407.3	59335.1	-22721.5	-106812.1	15159.1
2308	ULS_V_01	41435.8	13169.1	-19231.9	98.4	1244.7	-358.6
2308	ULS_V_08	47252.1	-36126.8	196350.1	98.4	1254.7	-297.1
2308	ULS_V_15	47252.1	-6407.3	63717.2	22918.3	109311.4	-15820.0
2308	ULS_V_10	41383.0	-6407.3	59335.8	-22721.5	-106812.1	15159.1







Tabella 12: Combinazioni sismiche SLV: azioni agenti ad intradosso plinto SPB - Group

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

Nella Tabella 13 si riportano gli scarichi per gli stati limite ultimi statici (SLU), ottenuti considerando sistema di riferimento codice calcolo Group (Figura 6-2).

NODE	LOAD	VERT	LONG	LONG	TRASV	TRASV	TORC
		FX	FY	MZ	FZ	MY	MX
2308	ULS_19	64995.0	-3790.1	74380.9	951.7	8975.768	-2818.6
2308	ULS_09	64721.6	-10750.9	116251.8	951.7	8951.881	-2887.2
2308	ULS_53	62121.4	-9696.7	91779.1	820.9	8219.105	-2230.6
2308	ULS_02	66362.7	-10280.5	106544.7	1293.4	15522.116	-3786.8
2308	ULS_48	43281.8	-5560.4	51955.9	1074.7	11403.459	-2681.7
2308	ULS_02	66362.7	-10280.5	106544.7	1293.4	15522.116	-3786.8
2308	ULS_38	51173.6	-4260.5	61247.4	1293.4	15546.003	-3752.5
2308	ULS_53	62121.4	-9696.7	91779.1	820.9	8219.105	-2230.6
2308	ULS_47	43281.8	-5560.4	51954.7	1074.7	11403.459	-2681.7
2308	ULS_10	64721.6	-10750.9	116252.9	951.7	8951.881	-2887.2
2308	ULS_23	50790.8	-8769.2	90002.8	1293.4	15546.003	-3786.8
2308	ULS_54	62121.4	-9696.7	91781.0	820.9	8219.105	-2230.6

Tabella 13: Combinazioni di statiche SLU-A1: azioni agenti ad intradosso plinto SPB - Group


<b>APPALTATORE:</b> Consorzio <span style="margin-left: 100px;">Soci</span>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <span style="margin-left: 100px;">Mandanti</span>   						
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 20 di 354

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

Nella **Tabella 14** si riportano le combinazioni di carico caratteristiche impiegate per gli stati limite di esercizio ottenute considerando sistema di riferimento codice calcolo Group (Figura 6-2).

NODE	LOAD	VERT	LONG	LONG	TRASV	TRASV	TORC
		FX	FY	MZ	FZ	MY	MX
2308	CH_19	47948.6	-4220.3	59515.1	641.5	6010.774	-1906.9
2308	CH_10	47328.6	-7759.8	82743.9	641.5	6010.773	-1954.2
2308	CH_29	45535.4	-7032.7	65864.9	551.3	5505.411	-1501.4
2308	CH_02	48460.4	-7435.4	76048.5	877.1	10541.970	-2574.6
2308	CH_24	43281.8	-5422.2	50905.1	716.5	7579.556	-1787.8
2308	CH_15	48724.4	-4544.7	57456.7	877.1	10541.970	-2551.0
2308	CH_16	48724.4	-4544.7	57457.9	877.1	10541.970	-2551.0
2308	CH_29	45535.4	-7032.7	65864.9	551.3	5505.411	-1501.4
2308	CH_23	43281.8	-5422.2	50903.9	716.5	7579.556	-1787.8
2308	CH_10	47328.6	-7759.8	82743.9	641.5	6010.773	-1954.2
2308	CH_02	48460.4	-7435.4	76048.5	877.1	10541.970	-2574.6
2308	CH_30	45535.4	-7032.7	65866.8	551.3	5505.411	-1501.4

**Tabella 14: Combinazioni di esercizio SLE: azioni agenti ad intradosso plinto SPB - Group**

<b>APPALTATORE:</b> Consorzio <span style="margin-left: 100px;">Soci</span>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>																	
<b>PROGETTAZIONE:</b> Mandataria <span style="margin-left: 100px;">Mandanti</span>   	<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>IF28</td> <td>01</td> <td>E ZZ CL</td> <td>VI0403 001</td> <td>B</td> <td>21 di 354</td> </tr> </table>						COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF28	01	E ZZ CL	VI0403 001	B	21 di 354
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO													
IF28	01	E ZZ CL	VI0403 001	B	21 di 354													
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>																		

## 7 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).

### 7.1 DESCRIZIONE DEL MODELLO DI CALCOLO GROUP

Il modello di calcolo è stato costruito nel seguente modo:

<b>APPALTATORE:</b> Consorzio <span style="margin-left: 100px;">Soci</span>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>												
<b>PROGETTAZIONE:</b> Mandataria <span style="margin-left: 100px;">Mandanti</span>   													
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	<table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">COMMESSA</td> <td style="width: 15%;">LOTTO</td> <td style="width: 15%;">CODIFICA</td> <td style="width: 15%;">DOCUMENTO</td> <td style="width: 15%;">REV.</td> <td style="width: 15%;">FOGLIO</td> </tr> <tr> <td>IF28</td> <td>01</td> <td>E ZZ CL</td> <td>VI0403 001</td> <td>B</td> <td>22 di 354</td> </tr> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF28	01	E ZZ CL	VI0403 001	B	22 di 354
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO								
IF28	01	E ZZ CL	VI0403 001	B	22 di 354								

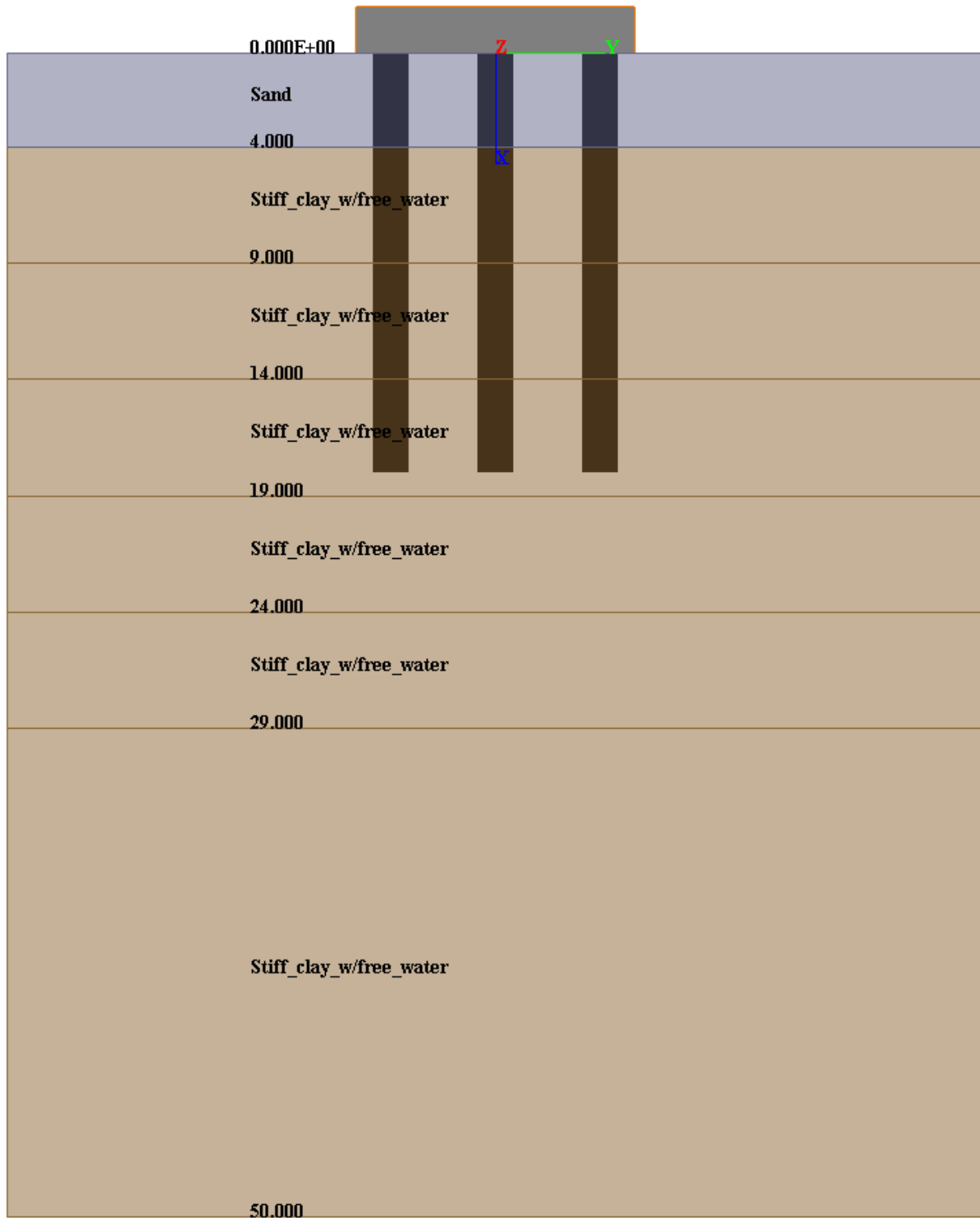



Figura 7-1: Vista frontale del modello GROUPv2016

<b>APPALTATORE:</b> Consorzio <span style="margin-left: 100px;">Soci</span>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>																	
<b>PROGETTAZIONE:</b> Mandataria <span style="margin-left: 100px;">Mandanti</span>   	<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>IF28</td> <td>01</td> <td>E ZZ CL</td> <td>VI0403 001</td> <td>B</td> <td>23 di 354</td> </tr> </table>						COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF28	01	E ZZ CL	VI0403 001	B	23 di 354
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO													
IF28	01	E ZZ CL	VI0403 001	B	23 di 354													
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>																		

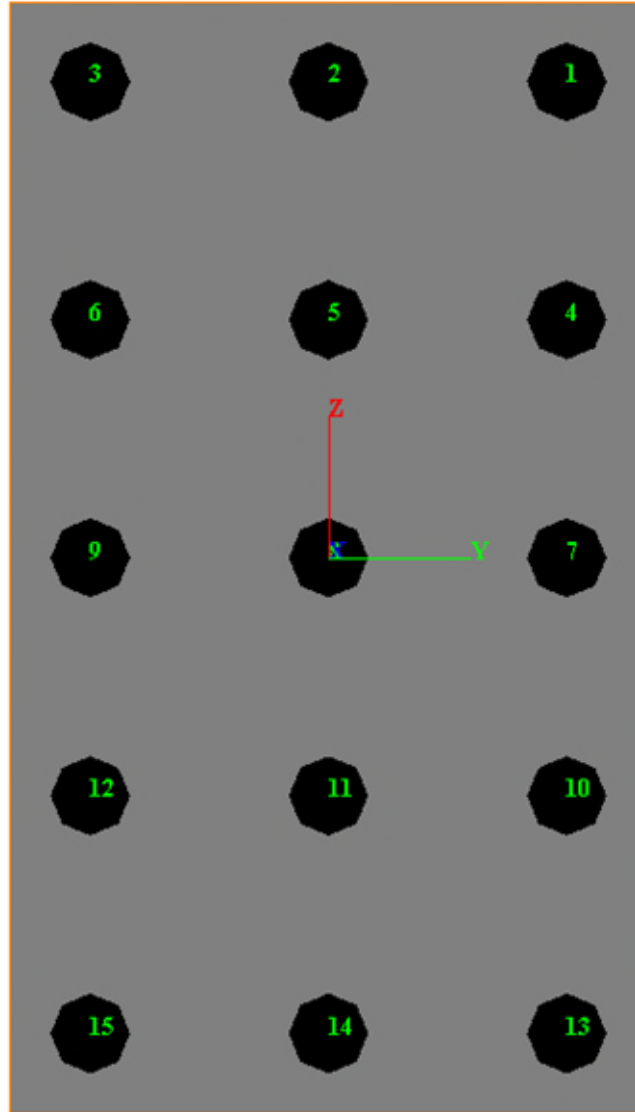








Figura 7-2: Vista in pianta del modello GROUPv2016

In accordo al § 4.2 nelle seguenti Figura 7-3 ÷ Figura 7-10 si riporta il modello stratigrafico di calcolo e i parametri geotecnici assegnati ai singoli strati. I parametri di rigidezza del terreno sono stati assunti in accordo ai criteri illustrati nella relazione al ref. 2), § 8.1.1 per le “stiff clays with free water”.

<b>APPALTATORE:</b> Consorzio <span style="margin-left: 100px;">Soci</span>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <span style="margin-left: 100px;">Mandanti</span>   	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	COMMESSA <span style="margin-left: 20px;">LOTTO</span> <span style="margin-left: 20px;">CODIFICA</span> <span style="margin-left: 20px;">DOCUMENTO</span> <span style="margin-left: 20px;">REV.</span> <span style="margin-left: 20px;">FOGLIO</span> IF28 <span style="margin-left: 20px;">01</span> <span style="margin-left: 20px;">E ZZ CL</span> <span style="margin-left: 20px;">VI0403 001</span> <span style="margin-left: 20px;">B</span> <span style="margin-left: 20px;">24 di 354</span>

Layer	Soil Type	Depth for Top of Soil Layer (m)	Depth for Bottom of Soil Layer (m)	Properties of Layer
1	Sand (Reese)	0	4	1: Sand (Reese, et al.)
2	Stiff Clay with Free Water (Reese)	4	9	2: Stiff Clay with Free Water
3	Stiff Clay with Free Water (Reese)	9	14	3: Stiff Clay with Free Water
4	Stiff Clay with Free Water (Reese)	14	19	4: Stiff Clay with Free Water
5	Stiff Clay with Free Water (Reese)	19	24	5: Stiff Clay with Free Water
6	Stiff Clay with Free Water (Reese)	24	29	6: Stiff Clay with Free Water
7	Stiff Clay with Free Water (Reese)	29	50	7: Stiff Clay with Free Water

Buttons: Add Row, Insert Row, Delete Row

Figura 7-3: Modello stratigrafico GROUP V2016

1=Top, 2=Bottom	Effective Unit Weight (kN/m <sup>3</sup> )	Friction Angle, (DEG.)	p-y Modulus, k (kN/m <sup>3</sup> )	Ultimate Unit Side Friction (kN/m <sup>2</sup> )	Ultimate Unit Tip Resistance (kN/m <sup>2</sup> )
1	9	29	16300	18	0
2	9	29	16300	18	0

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 7-4: Layer no.1 (BNA3 alt)



<b>APPALTATORE:</b> Consorzio <span style="margin-left: 100px;">Soci</span>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <span style="margin-left: 100px;">Mandanti</span>   	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	COMMESSA <span style="margin-left: 20px;">LOTTO</span> <span style="margin-left: 20px;">CODIFICA</span> <span style="margin-left: 20px;">DOCUMENTO</span> <span style="margin-left: 20px;">REV.</span> <span style="margin-left: 20px;">FOGLIO</span> IF28 <span style="margin-left: 20px;">01</span> <span style="margin-left: 20px;">E ZZ CL</span> <span style="margin-left: 20px;">VI0403 001</span> <span style="margin-left: 20px;">B</span> <span style="margin-left: 20px;">25 di 354</span>

**Stiff Clay with Free Water 2**

1=Top, 2=Bottom	Effective Unit Weight (kN/m <sup>3</sup> )	Undrained Cohesion, c (kN/m <sup>2</sup> )	p-y Modulus, k (kN/m <sup>3</sup> )	Strain Factor E50	Ultimate Unit Side Friction (kN/m <sup>2</sup> )	Ultimate Unit Tip Resistance (kN/m <sup>2</sup> )
1	10.5	120	270000	0.005	82.2	2323.8
2	10.5	120	270000	0.005	82.2	2323.8

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.

(K=110000 per analisi SLE)

Figura 7-5: Layer no.2 (BNA3)

**Stiff Clay with Free Water 3**

1=Top, 2=Bottom	Effective Unit Weight (kN/m <sup>3</sup> )	Undrained Cohesion, c (kN/m <sup>2</sup> )	p-y Modulus, k (kN/m <sup>3</sup> )	Strain Factor E50	Ultimate Unit Side Friction (kN/m <sup>2</sup> )	Ultimate Unit Tip Resistance (kN/m <sup>2</sup> )
1	10.5	160	270000	0.005	94.87	2683.3
2	10.5	160	270000	0.005	94.87	2683.3

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.

(K=110000 per analisi SLE)

Figura 7-6: Layer no.3 (BNA3)

<b>APPALTATORE:</b> Consorzio <b>Soci</b> 	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b> 	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	COMMESSA <b>LOTTO</b> <b>CODIFICA</b> <b>DOCUMENTO</b> <b>REV.</b> <b>FOGLIO</b> <b>IF28</b> <b>01</b> <b>E ZZ CL</b> <b>VI0403 001</b> <b>B</b> <b>26 di 354</b>

**Stiff Clay with Free Water 4**

1=Top, 2=Bottom	Effective Unit Weight (kN/m <sup>3</sup> )	Undrained Cohesion, c (kN/m <sup>2</sup> )	p-y Modulus, k (kN/m <sup>3</sup> )	Strain Factor E50	Ultimate Unit Side Friction (kN/m <sup>2</sup> )	Ultimate Unit Tip Resistance (kN/m <sup>2</sup> )
1	10.5	200	270000	0.005	106.07	3000
2	10.5	200	270000	0.005	106.07	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.

(K=110000 per analisi SLE)

Figura 7-7: Layer no.4 (BNA3)

**Stiff Clay with Free Water 5**

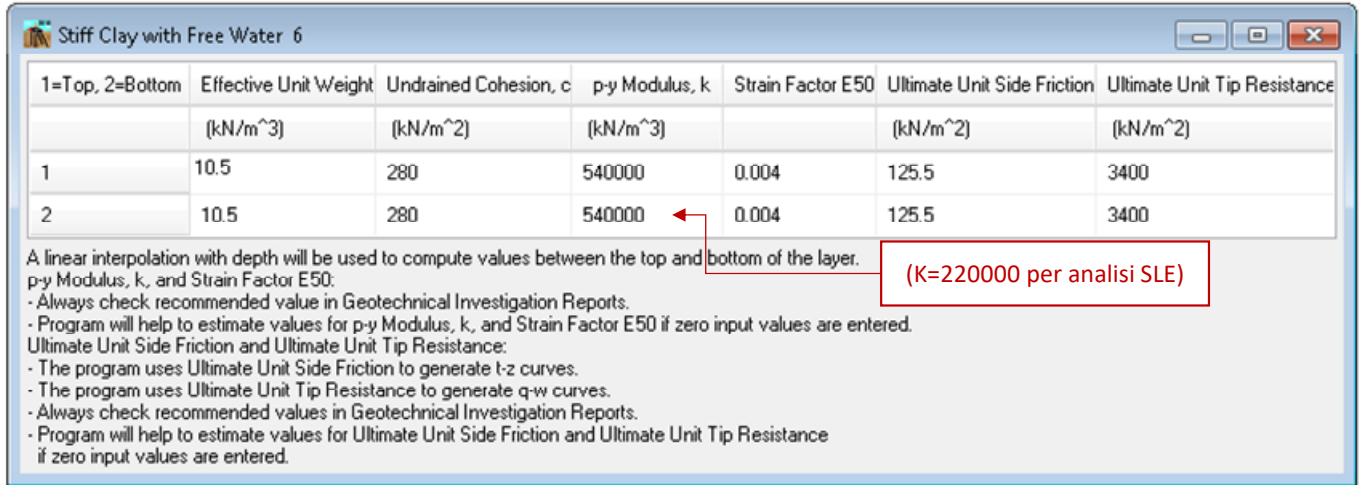
1=Top, 2=Bottom	Effective Unit Weight (kN/m <sup>3</sup> )	Undrained Cohesion, c (kN/m <sup>2</sup> )	p-y Modulus, k (kN/m <sup>3</sup> )	Strain Factor E50	Ultimate Unit Side Friction (kN/m <sup>2</sup> )	Ultimate Unit Tip Resistance (kN/m <sup>2</sup> )
1	10.5	240	540000	0.004	116.19	3286.3
2	10.5	240	540000	0.004	116.19	3286.3

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.

(K=220000 per analisi SLE)

Figura 7-8: Layer no.5 (BNA3)

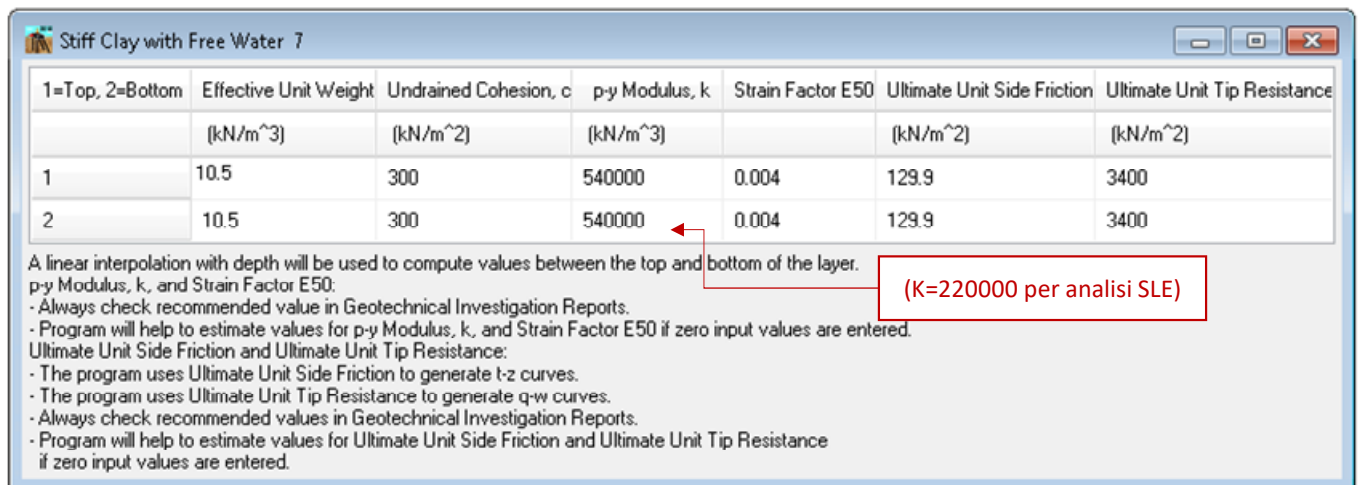
<b>APPALTATORE:</b> Consorzio <span style="margin-left: 100px;">Soci</span> 	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <span style="margin-left: 100px;">Mandanti</span> 	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	COMMESSA <span style="margin-left: 20px;">LOTTO</span> <span style="margin-left: 20px;">CODIFICA</span> <span style="margin-left: 20px;">DOCUMENTO</span> <span style="margin-left: 20px;">REV.</span> <span style="margin-left: 20px;">FOGLIO</span> IF28 <span style="margin-left: 20px;">01</span> <span style="margin-left: 20px;">E ZZ CL</span> <span style="margin-left: 20px;">VI0403 001</span> <span style="margin-left: 20px;">B</span> <span style="margin-left: 20px;">27 di 354</span>



1=Top, 2=Bottom	Effective Unit Weight (kN/m <sup>3</sup> )	Undrained Cohesion, c (kN/m <sup>2</sup> )	p-y Modulus, k (kN/m <sup>3</sup> )	Strain Factor E50	Ultimate Unit Side Friction (kN/m <sup>2</sup> )	Ultimate Unit Tip Resistance (kN/m <sup>2</sup> )
1	10.5	280	540000	0.004	125.5	3400
2	10.5	280	540000	0.004	125.5	3400

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 7-9: Layer no.6 (BNA3)



1=Top, 2=Bottom	Effective Unit Weight (kN/m <sup>3</sup> )	Undrained Cohesion, c (kN/m <sup>2</sup> )	p-y Modulus, k (kN/m <sup>3</sup> )	Strain Factor E50	Ultimate Unit Side Friction (kN/m <sup>2</sup> )	Ultimate Unit Tip Resistance (kN/m <sup>2</sup> )
1	10.5	300	540000	0.004	129.9	3400
2	10.5	300	540000	0.004	129.9	3400

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 7-10: Layer no.7 (BNA3)

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

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

Si ricorda che per le analisi allo SLE (vedasi Ref. 2)) sono stati utilizzati per le curve p-y i coefficienti di rigidità del terreno suggeriti dal programma per carichi ciclici; facendo riferimento alle Figura 7-4 ÷ Figura 7-10 sono stati utilizzati i valori evidenziati di lato.

SLE	FOR. X, KN	FOR.H, KN	MOM, KN-M	MOM X, KN- M
max	2733,6	344,7	970,7	0,1
min	1603,3	124,5	388,8	-0,3

Tabella 15: Sollecitazioni allo SLE massime e minime per i pali di fondazione

<b>APPALTATORE:</b> Consorzio <span style="margin-left: 100px;">Soci</span>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>												
<b>PROGETTAZIONE:</b> Mandataria <span style="margin-left: 100px;">Mandanti</span>   													
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	<table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">COMMESSA</td> <td style="width: 15%;">LOTTO</td> <td style="width: 15%;">CODIFICA</td> <td style="width: 15%;">DOCUMENTO</td> <td style="width: 15%;">REV.</td> <td style="width: 15%;">FOGLIO</td> </tr> <tr> <td>IF28</td> <td>01</td> <td>E ZZ CL</td> <td>VI0403 001</td> <td>B</td> <td>28 di 354</td> </tr> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF28	01	E ZZ CL	VI0403 001	B	28 di 354
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO								
IF28	01	E ZZ CL	VI0403 001	B	28 di 354								

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.

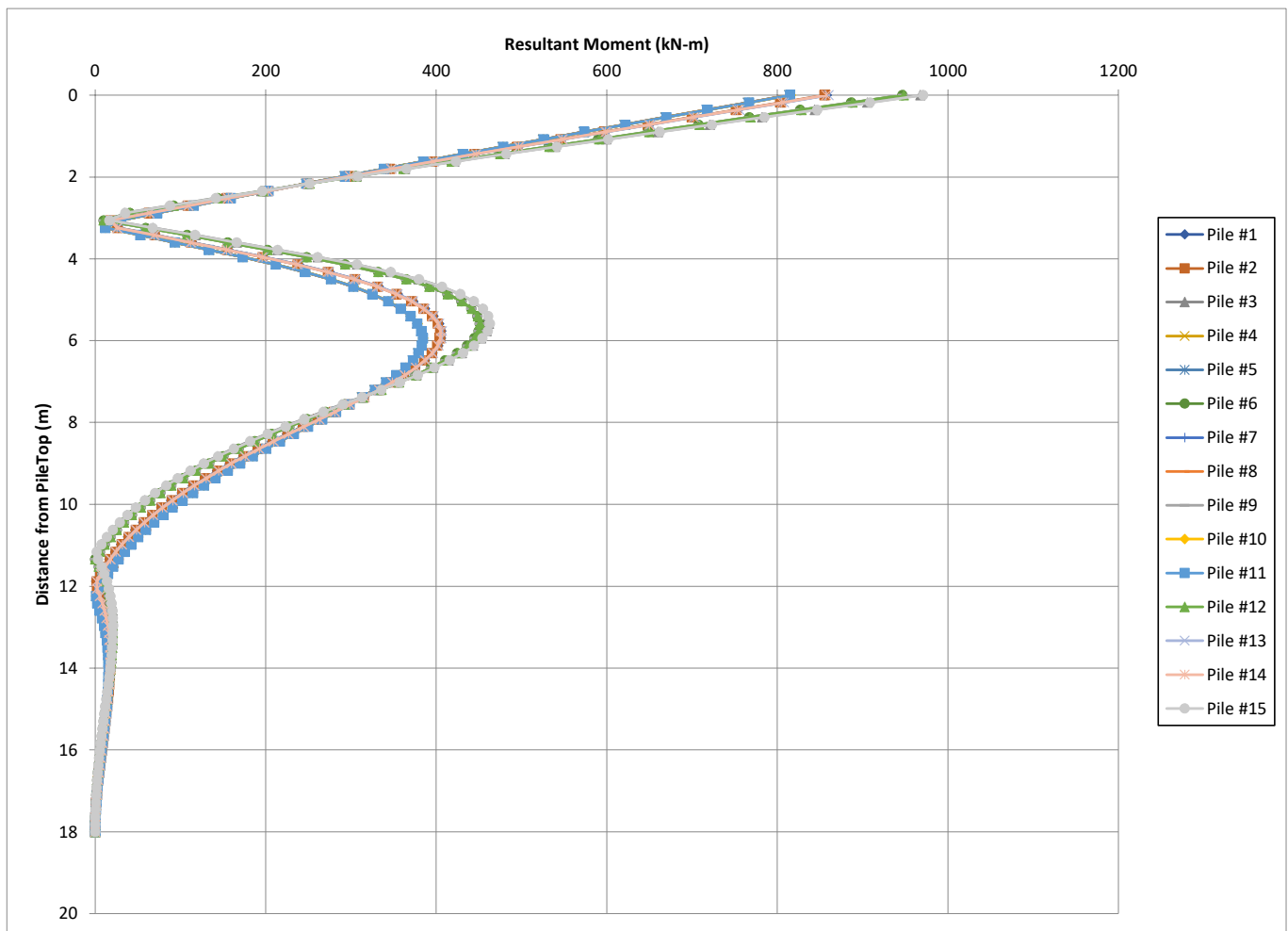


Figura 7-11: Combinazioni SLE: Andamento con la profondità del momento (combo SLE 2-CH\_09).

<b>APPALTATORE:</b> Consorzio <b>HirpiniaAV</b> Soci <b>salini impregilo</b> <b>ASTALDI</b>		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <b>SOJL</b> Mandanti <b>NETENGINEERING</b> <b>Alpina</b>							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>		COMMESSA <b>IF28</b>	LOTTO <b>01</b>	CODIFICA <b>E ZZ CL</b>	DOCUMENTO <b>VI0403 001</b>	REV. <b>B</b>	FOGLIO <b>29 di 354</b>

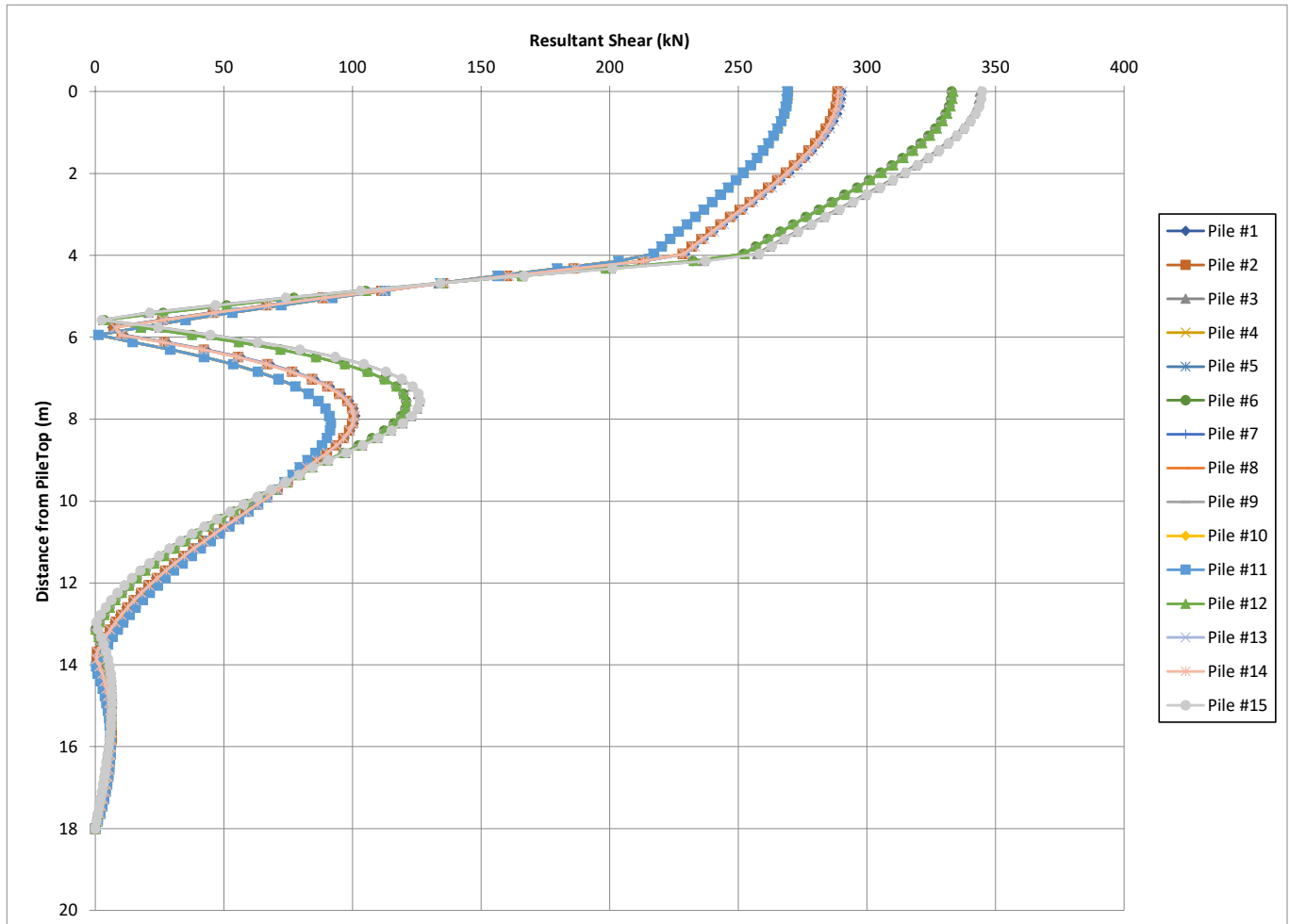




Figura 7-12: Combinazioni SLE: Andamento con la profondità del taglio (combo SLE 2-CH\_09).

### 7.2.1 Spostamenti

Nella Tabella 16 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 17.

<b>APPALTATORE:</b> Consorzio <b>Soci</b> 	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b> 	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	COMMESSA <b>LOTTO</b> <b>CODIFICA</b> <b>DOCUMENTO</b> <b>REV.</b> <b>FOGLIO</b> <b>IF28</b> <b>01</b> <b>E ZZ CL</b> <b>VI0403 001</b> <b>B</b> <b>30 di 354</b>

VERTICAL , M	HORIZONTAL Y, M	HORIZONTAL Z, M	ANGLE ROT. X,RAD	ANGLE ROT. Y,RAD	ANGLE ROT. Z,RAD	Ppostamento spalla - sle		
						H pila (m)	4,85	
						asse Y (mm)	asse Z (mm)	asse X (mm)
0,0012663	-0,0004590	0,0001230	-2,810E-07	5,265E-06	9,093E-06	-0,503	0,149	2,257
0,0012425	-0,0012484	0,0001339	-2,577E-07	5,301E-06	6,169E-05	-1,548	0,160	2,215
0,0011688	-0,0010655	0,0001055	1,032E-07	3,399E-06	4,293E-05	-1,274	0,122	2,083
0,0012643	-0,0011511	0,0001903	1,658E-07	8,167E-06	4,688E-05	-1,378	0,230	2,254
0,0011005	-0,0007216	0,0001295	2,530E-07	5,683E-06	2,206E-05	-0,829	0,157	1,962
0,0012744	-0,0004835	0,0001768	-9,277E-08	8,123E-06	3,285E-06	-0,499	0,216	2,272
0,0012744	-0,0004835	0,0001768	-9,277E-08	8,123E-06	3,286E-06	-0,499	0,216	2,272
0,0011859	-0,0011540	0,0001126	7,915E-08	3,397E-06	4,817E-05	-1,388	0,129	2,114
0,0012744	-0,0004835	0,0001768	-9,277E-08	8,123E-06	3,285E-06	-0,499	0,216	2,272
0,0012425	-0,0012484	0,0001339	-2,577E-07	5,301E-06	6,169E-05	-1,548	0,160	2,215
0,0012489	-0,0005888	0,0001346	-8,173E-07	6,398E-06	2,288E-05	-0,700	0,166	2,226
0,0011005	-0,0007216	0,0001295	2,530E-07	5,683E-06	2,206E-05	-0,829	0,157	1,962

Tabella 16: Combinazioni SLE: spostamenti e rotazioni ad intradosso plinto.

DATI FONDAZIONE		
Larghezza plinto	12	m
Profondità plinto	21	m
Diametro palo	1,5	m
Lunghezza palo	18	m
interasse palo	4,5	m
numero pali	15	-
Coefficiente R	1,94	-
Coefficiente RG	0,12	-
Coeff. amplificazione cedimento del gruppo EG	1,78	-

Tabella 17: Coefficiente amplificativo del cedimento verticale per effetto gruppo.

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

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

SLU	FOR. X, KN	FOR.H, KN	MOM, KN-M	MOM X, KN-M
	*****	*****	*****	*****
max	3728,6	489,4	1392,7	0,2
min	1482,3	112,7	359,5	-0,5

Tabella 18: 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.

<b>APPALTATORE:</b> Consorzio <span style="margin-left: 100px;">Soci</span> <span style="margin-left: 50px;"></span> <span style="margin-left: 50px;"></span>		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>											
<b>PROGETTAZIONE:</b> Mandataria <span style="margin-left: 100px;">Mandanti</span> <span style="margin-left: 50px;"></span> <span style="margin-left: 50px;">Alpina</span>		<b>COMMESSA</b> IF28		<b>LOTTO</b> 01		<b>CODIFICA</b> E ZZ CL		<b>DOCUMENTO</b> VI0403 001		<b>REV.</b> B		<b>FOGLIO</b> 31 di 354	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>													

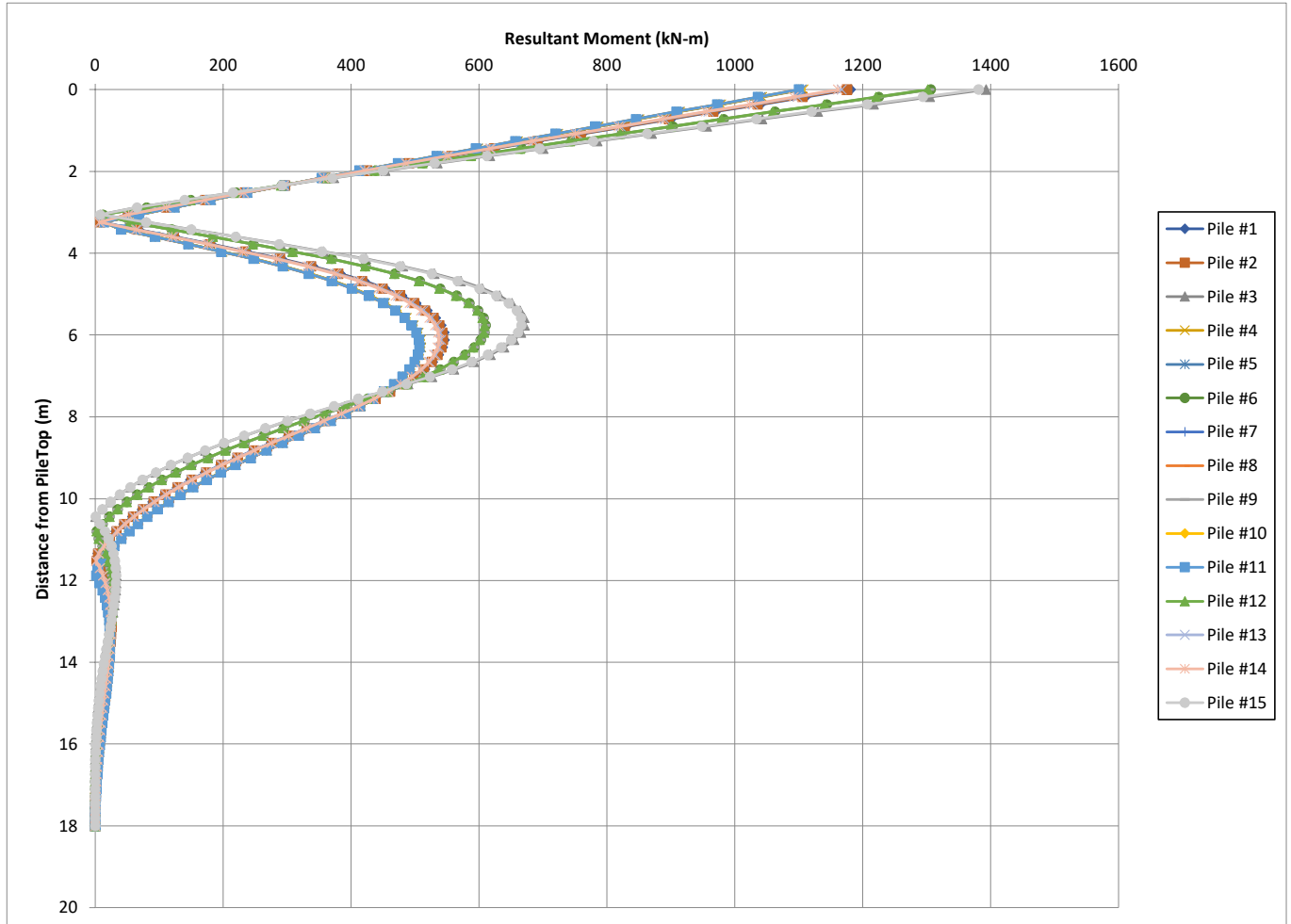


Figura 7-13: Combinazioni statica SLU: Andamento con la profondità del momento (combo 4- ULS\_02).

<b>APPALTATORE:</b> Consorzio <span style="margin-left: 100px;">Soci</span> 		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <span style="margin-left: 100px;">Mandanti</span> 							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>		COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 32 di 354

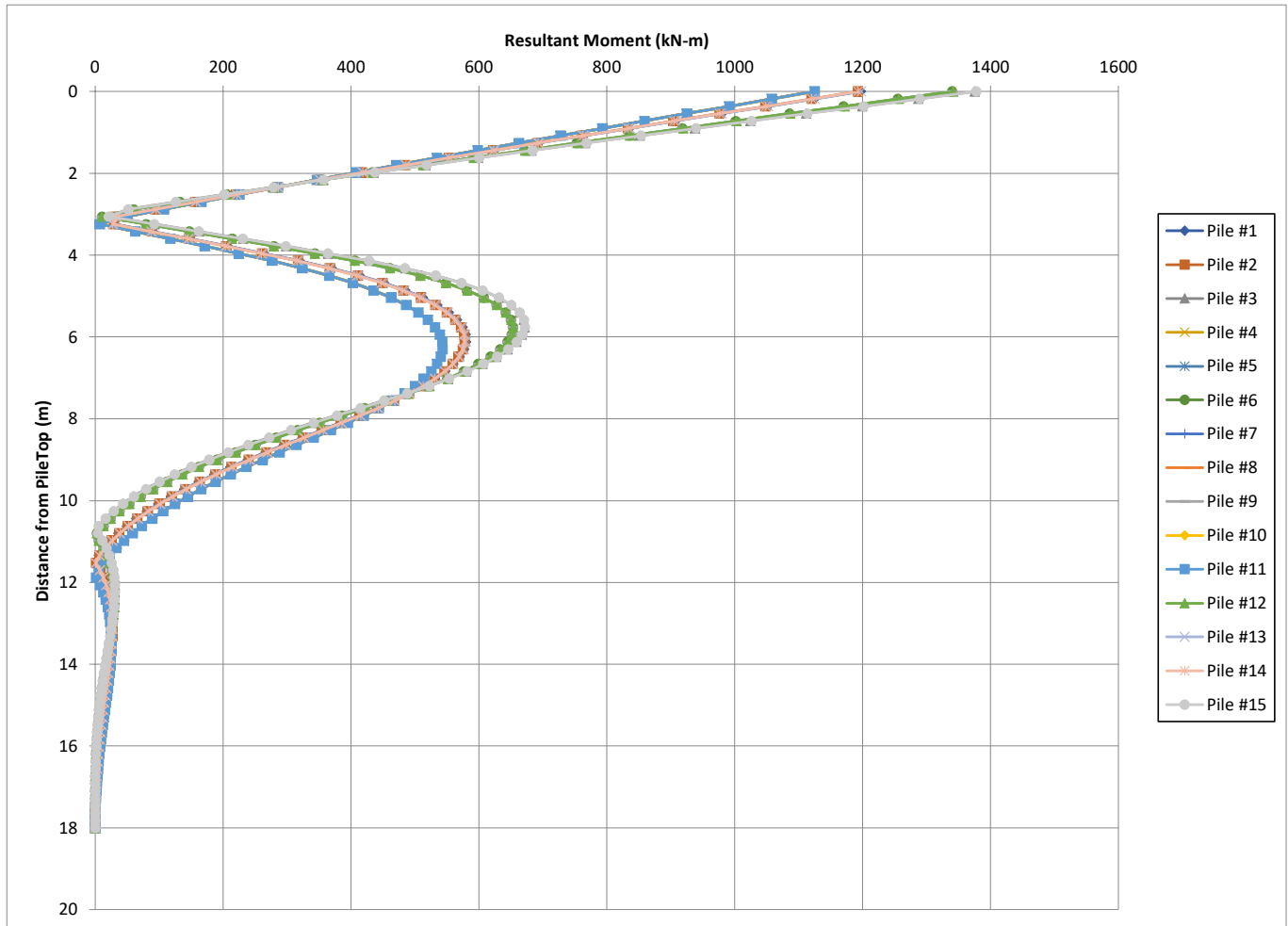


Figura 7-14: Combinazioni statica SLU: Andamento con la profondità del taglio (combo 2- ULS\_09).

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

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

SLV	FOR. X, KN	FOR.H, KN	MOM, KN-M	MOM X, KN- M
max	4975,2	1907,6	6201,5	10,1
min	-1590,1	110,2	259,8	-10,0

Tabella 19: 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.



<b>APPALTATORE:</b> Consorzio <b>HirpiniaAV</b> Soci <b>salini impregilo</b> <b>ASTALDI</b>		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <b>ROKSOJL</b> Mandanti <b>NETENGINEERING</b> <b>Alpina</b>							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>		COMMESSA <b>IF28</b>	LOTTO <b>01</b>	CODIFICA <b>E ZZ CL</b>	DOCUMENTO <b>VI0403 001</b>	REV. <b>B</b>	FOGLIO <b>33 di 354</b>

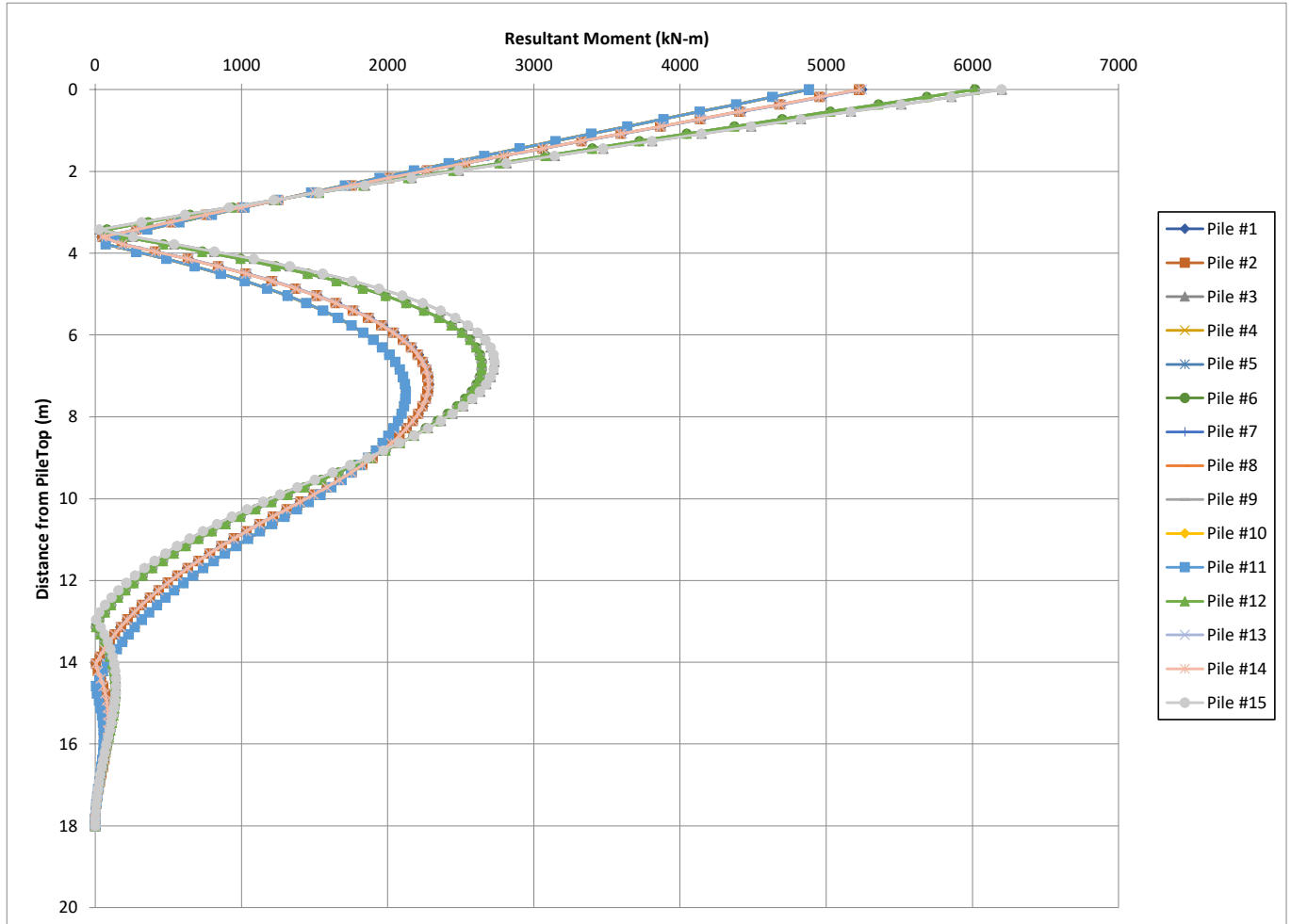


Figura 7-15: Combinazioni sismica SLV: Andamento con la profondità del momento (combo 16-1651-ULS\_V\_14).

<b>APPALTATORE:</b> Consorzio <b>HirpiniaAV</b> Soci <b>salini impregilo</b> <b>ASTALDI</b>		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <b>ROKSOJL</b> Mandanti <b>NETENGINEERING</b> <b>Alpina</b>							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>		COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 34 di 354

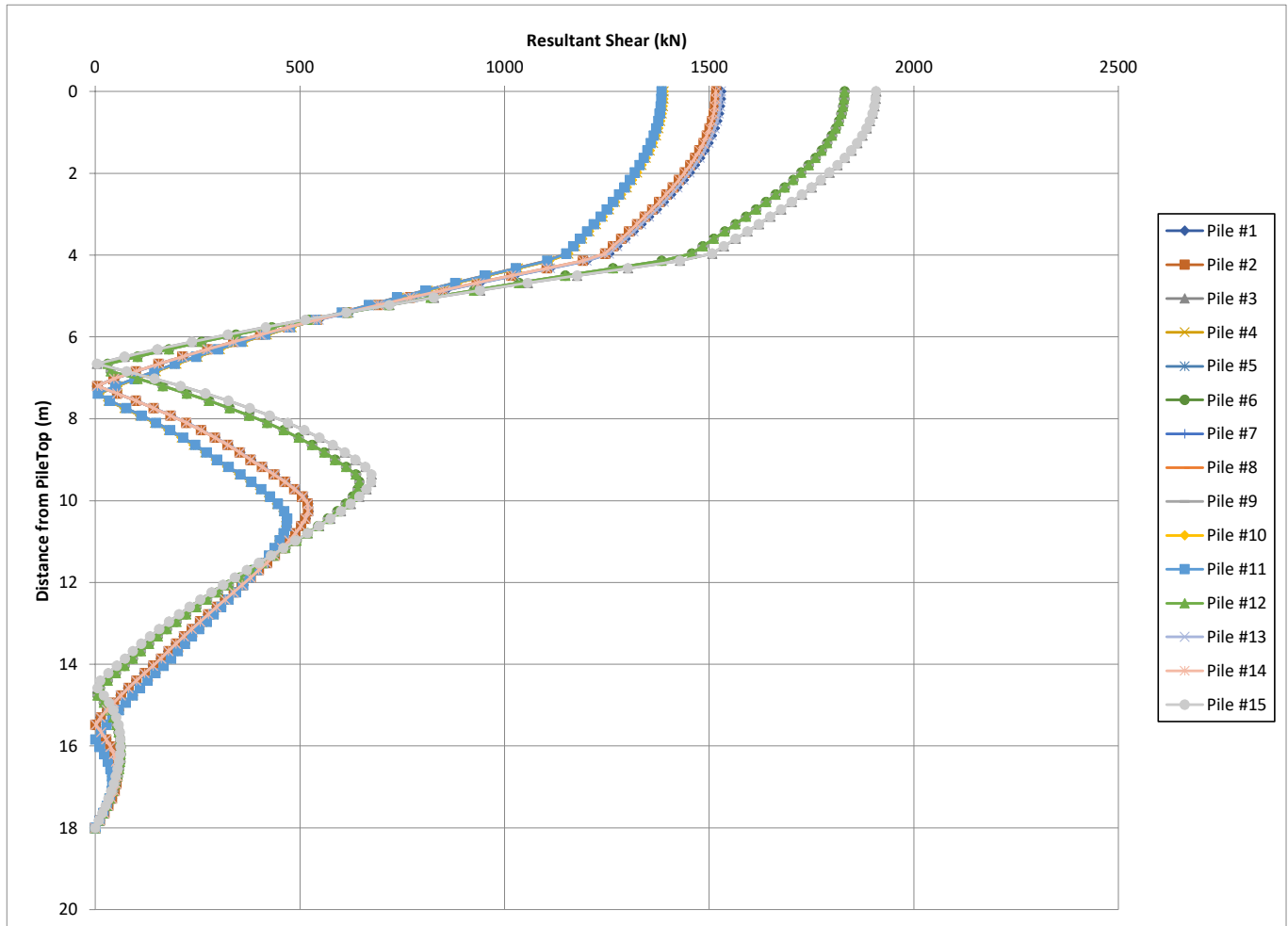




Figura 7-16: Combinazioni sismica SLV: Andamento con la profondità del taglio (combo 16-1651-ULS\_V\_14).

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   						
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 35 di 354

## 8 VERIFICA DEI PALI DI FONDAZIONE SPALLA A

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

Le sollecitazioni massime agenti lungo il fusto del palo sono riassunte nella Tabella 20.

LOAD CASE :	PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M	FOR.H, KN	MOM, KN-M
*****	*****	*****	*****	*****	*****	*****	*****		
SLV-14	3	4975,2	-1907,6	6,8335	0,073973	-22,754	-6201,5	1907,61	6201,54
SLV-14	13	-1590,1	-1529	5,8194	0,073973	-20,595	-5245,3	1529,01	5245,34

LOAD CASE :	PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M	FOR.H, KN	MOM, KN-M
*****	*****	*****	*****	*****	*****	*****	*****		
2_SLE	15					-110,13	-964,48		970,7
2_SLE	13	1603,3							

Tabella 20: 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 L18m. 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- Momenti Figura 7-15 e Taglio Figura 7-16 - sono state previste n. 2 ordini di armature principali:

1. L'armatura massima:
  - o ferri correnti: corona esterna n.26  $\varnothing 30$ ;
  - o ferri correnti: corona interna n.26  $\varnothing 30$ ;
  - o staffatura: doppia spirale  $\varnothing 14$  passo 10.
  
2. L'armatura minima:
  - o ferri correnti: corona esterna n.26  $\varnothing 30$ ;
  - o staffatura: spirale  $\varnothing 14$  passo 20.

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

<b>APPALTATORE:</b> Consorzio <b>HirpiniaAV</b> Soci <b>salini impregilo</b> <b>ASTALDI</b>	<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <b>ROKSOJL</b> Mandanti <b>NETENGINEERING</b> <b>Alpina</b>						
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	COMMESSA <b>IF28</b>	LOTTO <b>01</b>	CODIFICA <b>E ZZ CL</b>	DOCUMENTO <b>VI0403 001</b>	REV. <b>B</b>	FOGLIO <b>36 di 354</b>

geometria				
sezione trasversale				
D	c	d	passo	interferro
[cm]	[cm]	[cm]	[cm]	[cm]
<b>150</b>	<b>6,0</b>	141,1	16,0	13,0
armatura longitudinale				
n <sub>barre</sub>	φ	r <sub>i</sub>	A <sub>sl</sub>	c <sub>i</sub>
	[mm]	[cm]	[cm <sup>2</sup> ]	[cm]
<b>26</b>	<b>30</b>	66,10	183,78	8,90
<b>26</b>	<b>30</b>	59,10	183,78	15,90
armatura a taglio				
Tipo	φ	ρ	A <sub>sw</sub>	
	[mm]	[cm]	[cm <sup>2</sup> ]	
<b>spirale</b>	<b>14</b>	<b>5</b>	3,08	

sollecitazioni e risultati	
SLE	SLU
M <sub>Ek</sub> <b>970,7</b> [kNm]	M <sub>Ed</sub> <b>5245,3</b> [kNm]
N <sub>Ek</sub> <b>-1603,3</b> [kN]	N <sub>Ed</sub> <b>1590,1</b> [kN]
<b>momento di cracking</b>	
M <sub>cr</sub> 1343,5 [kNm]	
<b>quota asse neutro</b>	
y <sub>n</sub> 84,83 [cm]	
<b>tensioni e fessure</b>	
σ <sub>c,min</sub> -3,2 [MPa]	
σ <sub>s,min</sub> -42,2 [MPa]	
σ <sub>s,max</sub> 31,2 [MPa]	
<b>prezzo-flessione</b>	
M <sub>Rd</sub> 6638,7 [kNm]	
FS 1,27	
<b>taglio</b>	
V <sub>Rdc</sub> 533,4 [kN]	
predisporre armatura a taglio	
V <sub>Rds</sub> 3853,8 [kN]	
V <sub>Rdmax</sub> 4480,7 [kN]	
θ 30,0 [°]	
sezione duttile	
a <sub>l</sub> 93,1 [cm]	

materiali			
calcestruzzo		acciaio	
R <sub>ck</sub>	<b>30</b> [MPa]	f <sub>yk</sub>	<b>450</b> [MPa]
f <sub>ck</sub>	24,9 [MPa]	γ <sub>s</sub>	<b>1,15</b>
γ <sub>c</sub>	<b>1,5</b>	f <sub>yd</sub>	391,3 [MPa]
α <sub>cc</sub>	<b>0,85</b>	E <sub>s</sub>	<b>200000</b> [MPa]
f <sub>cd</sub>	14,1 [MPa]	ε <sub>uk</sub>	<b>10</b> [‰]
v	<b>0,5</b>		
ε <sub>c2</sub>	<b>2,0</b> [‰]		
ε <sub>cu2</sub>	<b>3,5</b> [‰]		
α <sub>e</sub>	<b>15,0</b>		
k <sub>t</sub>	<b>0,6</b>		
k <sub>1</sub>	<b>0,8</b>		
k <sub>3</sub>	<b>3,4</b>		
k <sub>4</sub>	<b>0,425</b>		
		valori limite	
		0,55 f <sub>ck</sub>	13,7 [MPa]
		0,75 f <sub>yk</sub>	337,5 [MPa]
		w <sub>k,lim</sub>	<b>0,2</b> [mm]

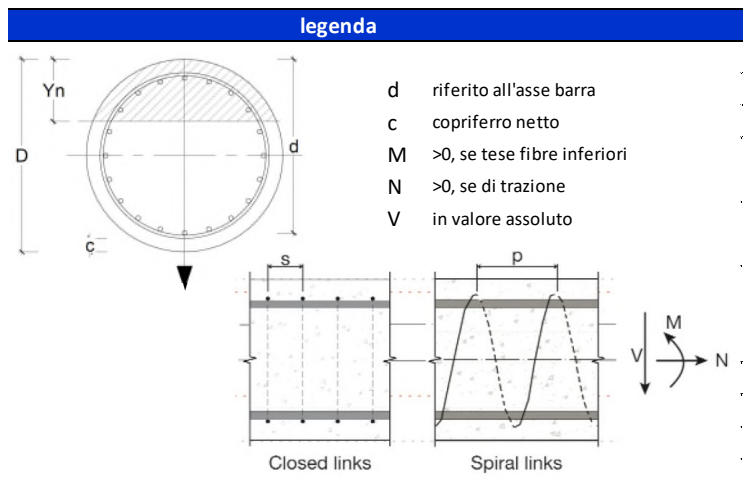


Tabella 8-21: Verifica del palo D=1500mm; trazione e armatura massima

<b>APPALTATORE:</b> Consorzio <b>HirpiniaAV</b> Soci <b>salini impregilo</b> <b>ASTALDI</b>	<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <b>ROKSOJL</b> Mandanti <b>NETENGINEERING</b> <b>Alpina</b>	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	
COMMESSA <b>IF28</b> LOTTO <b>01</b> CODIFICA <b>E ZZ CL</b> DOCUMENTO <b>VI0403 001</b> REV. <b>B</b> FOGLIO <b>37 di 354</b>	

geometria				
sezione trasversale				
D	c	d	passo	interferro
[cm]	[cm]	[cm]	[cm]	[cm]
<b>150</b>	<b>6,0</b>	141,1	16,0	13,0
armatura longitudinale				
n <sub>barre</sub>	φ	r <sub>i</sub>	A <sub>sl</sub>	c <sub>i</sub>
	[mm]	[cm]	[cm <sup>2</sup> ]	[cm]
<b>26</b>	<b>30</b>	66,10	183,78	8,90
60,60				
armatura a taglio				
Tipo	φ	p	A <sub>sw</sub>	
	[mm]	[cm]	[cm <sup>2</sup> ]	
<b>spirale</b>	<b>14</b>	<b>20</b>	3,08	

sollecitazioni e risultati	
SLE	SLU
M <sub>Ek</sub> <b>970,7</b> [kNm]	M <sub>Ed</sub> <b>2445,1</b> [kNm]
N <sub>Ek</sub> <b>-1603,3</b> [kN]	N <sub>Ed</sub> <b>1590,1</b> [kN]
<b>momento di cracking</b>	
M <sub>cr</sub> 1200,7 [kNm]	
<b>quota asse neutro</b>	
y <sub>n</sub> 78,26 [cm]	
<b>tensioni e fessure</b>	
σ <sub>c,min</sub> -3,9 [MPa]	
σ <sub>s,min</sub> -51,8 [MPa]	
σ <sub>s,max</sub> 46,9 [MPa]	
<b>prezzo-flessione</b>	
M <sub>Rd</sub> 3284,9 [kNm]	
FS 1,34	
<b>taglio</b>	
V <sub>Rdc</sub> 376,9 [kN]	
predisporre armatura a taglio	
V <sub>Rds</sub> 962,5 [kN]	
V <sub>Rdmax</sub> 4480,7 [kN]	
θ 30,0 [°]	
sezione duttile	
a <sub>i</sub> 90,1 [cm]	

materiali			
calcestruzzo		acciaio	
R <sub>ck</sub>	<b>30</b> [MPa]	f <sub>yk</sub>	<b>450</b> [MPa]
f <sub>ck</sub>	24,9 [MPa]	γ <sub>s</sub>	<b>1,15</b>
γ <sub>c</sub>	<b>1,5</b>	f <sub>yd</sub>	391,3 [MPa]
α <sub>cc</sub>	<b>0,85</b>	E <sub>s</sub>	<b>200000</b> [MPa]
f <sub>cd</sub>	14,1 [MPa]	ε <sub>uk</sub>	<b>10</b> [‰]
v	<b>0,5</b>	<b>valori limite</b>	
ε <sub>c2</sub>	<b>2,0</b> [‰]	0,55 f <sub>ck</sub>	13,7 [MPa]
ε <sub>cu2</sub>	<b>3,5</b> [‰]	0,75 f <sub>yk</sub>	337,5 [MPa]
α <sub>e</sub>	<b>15,0</b>	w <sub>k,lim</sub>	<b>0,2</b> [mm]
k <sub>t</sub>	<b>0,6</b>		
k <sub>1</sub>	<b>0,8</b>		
k <sub>3</sub>	<b>3,4</b>		
k <sub>4</sub>	<b>0,425</b>		

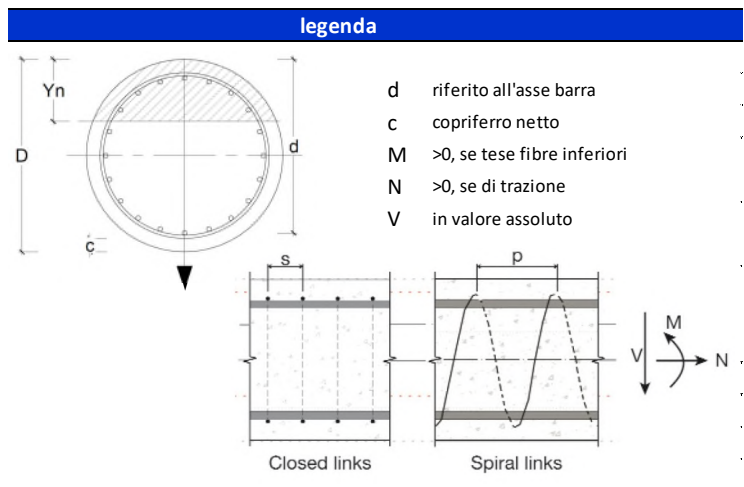


Tabella 8-22: Verifica del palo D=1500mm; armatura minima

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   						
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 38 di 354

### 8.1.1 Schemi armatura e incidenza del palo

Nelle Figura 8-1 e Figura 8-2 sono schematizzate le armature correnti e le armature di taglio. Nella Tabella 8-23 l'incidenza di armatura valutata con una percentuale di incremento pari al 10% dovuta a ganci di sollevamento, armature di confezionamento, legatura, ecc.; si considera una incidenza di progetto pari a 220kg/m<sup>3</sup>.

Tabella ferri						
ARMATURA PALO LUNGH. = 18 m						
POS.	N.	DIAM.	LUNG. (cm)	P.U.	LUNG. TOT. (cm)	PESO (kg)
1	26	30	1200	5,549	31200	1731
2	26	30	1200	5,549	31200	1731
3	26	30	940	5,549	24440	1356
4	1	14	42917	1,208	42917,06834	519
5	1	14	22321	1,208	22321,41872	270
6	1	14	15895	1,208	15895,47196	192
7	12	40	450	9,864	5400	533

**Kg 6332**

AREA PALO (m<sup>2</sup>) **1,77**  
 LUNGH. PALO (m) **18,00**  
 VOLUME (m<sup>3</sup>) **31,79**

INCIDENZA DI CALCOLO (kg/m<sup>3</sup>) **199,2**  
 Incremento percentuale % (\*) **10**  
 INCIDENZA DI PROGETTO (kg/m<sup>3</sup>) **~220**

(\*) incremento in % dovuto a ganci di sollevamento, armature di confezionamento, legature, ecc.

Tabella 8-23 Incidenza armatura

<b>APPALTATORE:</b> Consorzio <b>HirpiniaAV</b> Soci <b>salini impregilo</b> <b>ASTALDI</b>	<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <b>ROKSOJL</b> Mandanti <b>NETENGINEERING</b> <b>Alpina</b>	COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 39 di 354
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>						

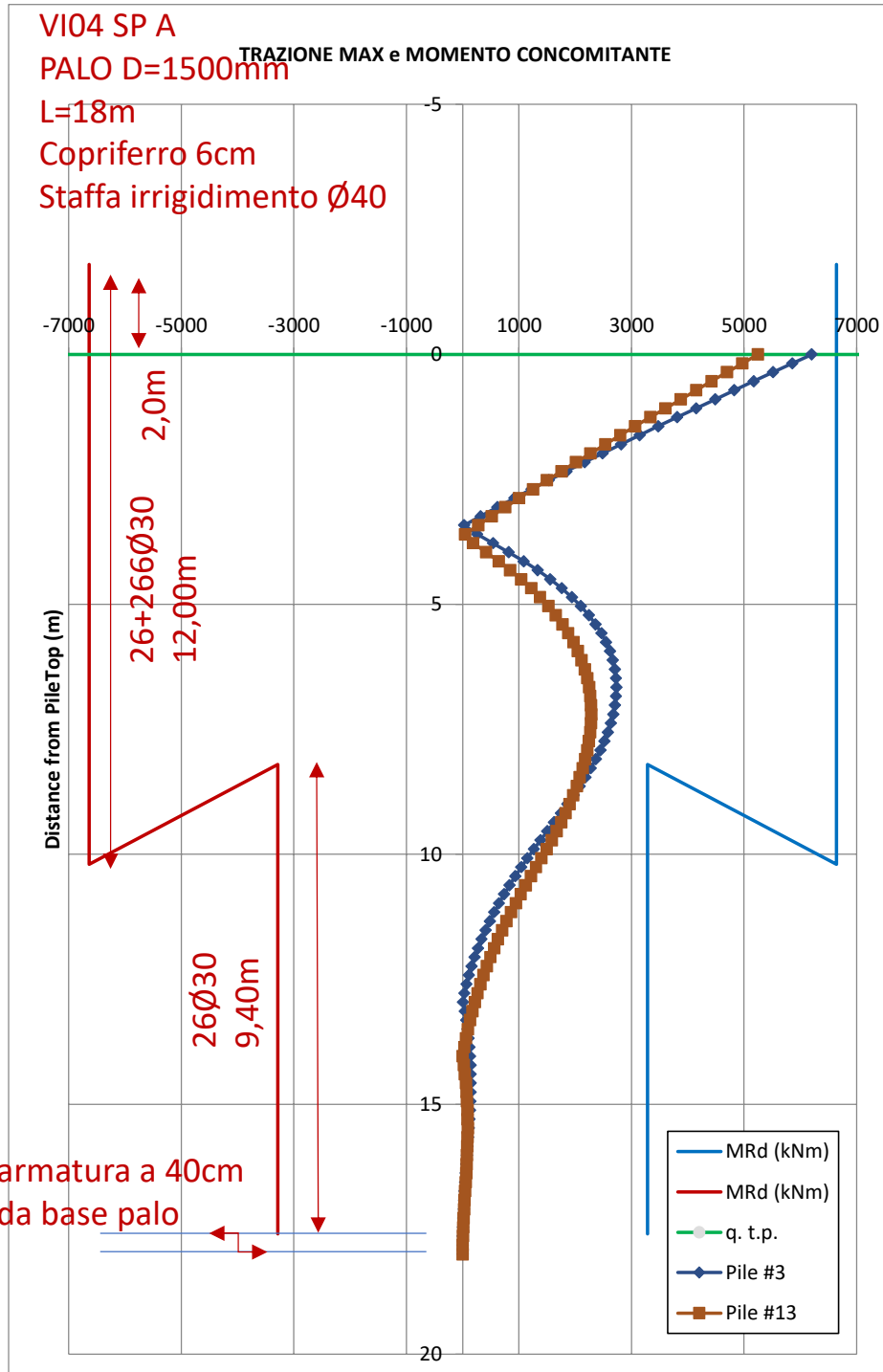


Figura 8-1: VI04 SP A Schema armatura gabbie

<b>APPALTATORE:</b> Consorzio <b>HirpiniaAV</b> Soci <b>salini impregilo</b> <b>ASTALDI</b>		<b>ITINERARIO NAPOLI – BARI</b>					
<b>PROGETTAZIONE:</b> Mandataria <b>ROKSOJL</b> Mandanti <b>NETENGINEERING</b> <b>Alpina</b>		<b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>		COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 40 di 354

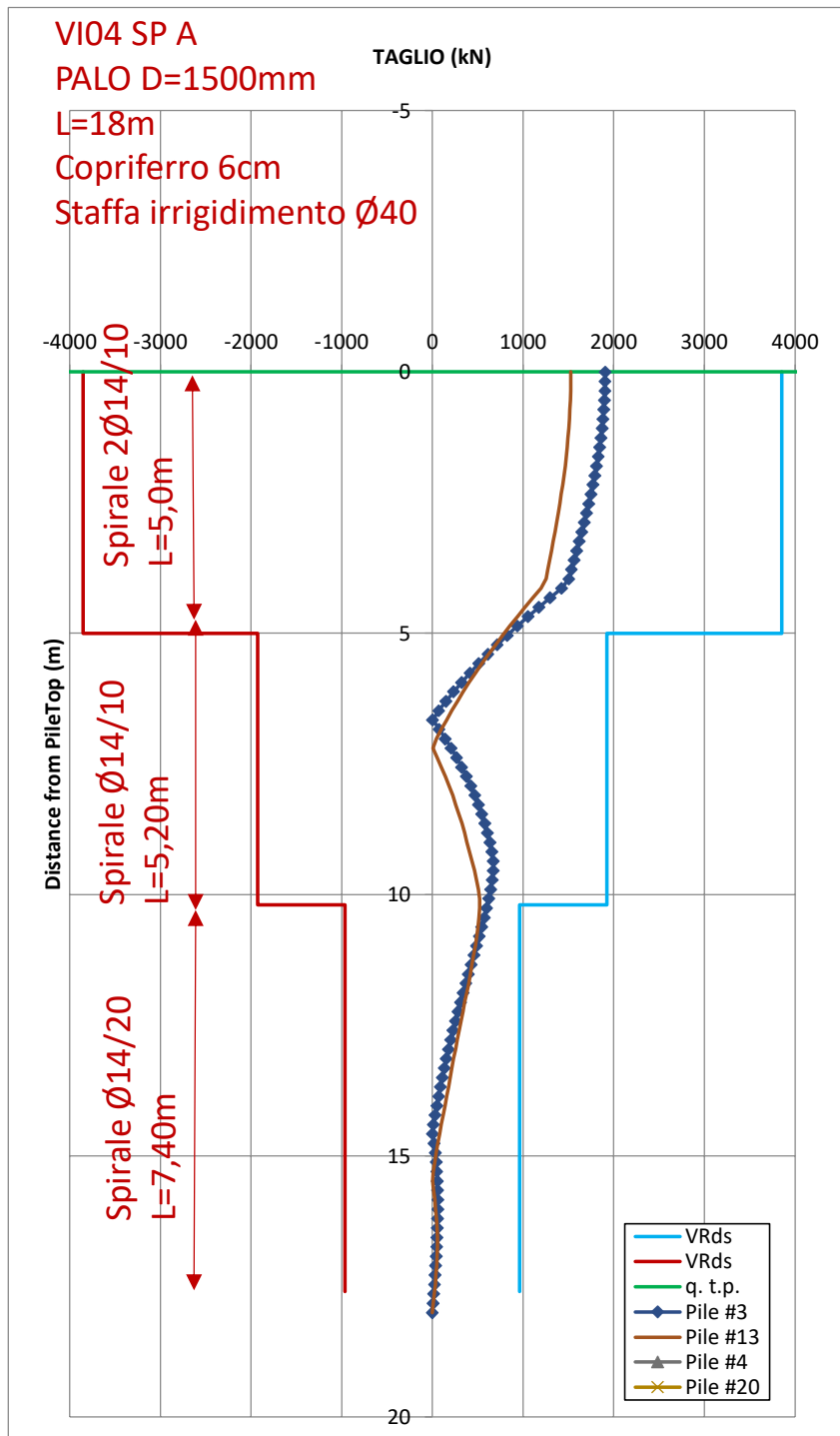


Figura 8-2: VI04 SP A Schema armatura a taglio



<b>APPALTATORE:</b> Consorzio <span style="margin-left: 100px;">Soci</span>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <span style="margin-left: 100px;">Mandanti</span>   						
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 41 di 354

## 9 VERIFICHE ALLO SLU DI TIPO GEOTECNICO SPALLA A

### 9.1 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. 2).

Di seguito si riporta, per i pali di fondazione di lunghezza  $L = 18$  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]	4975,2 (SLV)
Massima trazione, $N_{dt}$ , max [kN]	-1590,1 (SLV)

Tabella 24: Combinazione SLU e SLV: Sollecitazioni massime di compressione e trazione

Si verifica inoltre che lo sforzo assiale massimo in esercizio (Tabella 19) 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]	2733,6 (SLE)
--	--------------

Tabella 25: Combinazione SLE: Sollecitazione massima di compressione

In Tabella 26 si riporta, per i pali di lunghezza 18.0 m, la capacità portante a compressione ( $R_{c,d}$ ) e a trazione ( $R_{t,d}$ ) del palo isolato secondo l'Approccio 2 (A1+M1+R3).







Combinazione SLU A1+M1+R3 (metodo AGI)							Comb. SLU A1+M1+R3 (metodo AGI)				
L palo	Q <sub>I-c,k</sub>	Q <sub>b-c,k</sub>	Q <sub>I-c,d</sub>	Q <sub>b-c,d</sub>	$\Delta W$ palo	Q <sub>c,d</sub>	L palo	Q <sub>I-t,k</sub>	Q <sub>I-t,d</sub>	$\Delta W$ palo	Q <sub>t,d</sub>
m	kN	kN	kN	kN	kN	kN	m	kN	kN	kN	kN
18,0	6452,5	5301,4	3740,6	2618,0	620,3	5738,3	18,0	6452,5	3441,3	477,1	3918,5

Tabella 26: Capacità portante a compressione e a trazione dei pali di fondazione secondo l'Approccio 2 (A1+M1+R3).

#### 9.1.1 Capacità portante verticale del palo singolo

Stratigrafia e parametri geotecnici

Dati di input		
Diametro Palo	1.5	m
Sovraccarico efficace	27.0	kPa
HW da testa palo	0	m
$\gamma$ acqua	10	kN/m <sup>3</sup>
$\Delta z$ palo da p.c. originario	2.7	m
N° diametri per qb	4	(-)
L palo fuori terra	0	(m)
Peso calcestruzzo	25	kN/m <sup>3</sup>
Pressione max sul cls.	11.34	MPa







<b>APPALTATORE:</b> Consorzio <span style="margin-left: 100px;">Soci</span>   		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <span style="margin-left: 100px;">Mandanti</span>   							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>							

**Caratteristiche del terreno**

Profondità (m)		Strato	Terreno	$\gamma_{tot}$	Nspt		$c_u$ (kPa)		$\Delta-z$	$\phi^\circ$		Nq	
da	a	No.	(S,SL,G,A)	kN/m3	da	a	da	a	(m)	da	a	da	a
0,0	4,0	1	S	19,0					1,00	29	29	8,3	8,3
4,0	9,0	2	A	20,5			120	120	1,00				
9,0	14,0	3	A	20,5			160	160	1,00				
14,0	19,0	4	A	20,5			200	200	1,00				
19,0	24,0	5	A	20,5			240	240	1,00				
24,0	29,0	6	A	20,5			280	280	1,00				
29,0	50,0	7	A	20,5			300	300	1,00				

Verticali di indagine	$\xi_3$	$\xi_4$
5	1.50	1.34

Scelta di $\xi$	$\xi$
3	1.5

<b>APPALTATORE:</b> Consorzio <span style="margin-left: 100px;">Soci</span>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <span style="margin-left: 100px;">Mandanti</span>   	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	

Combinazione SLE (metodo AGI)						
L palo	$\tau_s$ calcolo	$q_{ub}$ calcolo	$R_{c,s,k}$	$R_{c,b,k}$	$\Delta W$ palo	$Q_{c,s,k}/1.25$
m	kPa	kPa	kN	kN	kN	kN
1,0	10,5	130,7	49,4	231,0	26,5	39,5
2,0	13,5	261,5	112,8	462,0	53,0	90,3
3,0	16,5	392,2	190,4	693,0	79,5	152,3
4,0	19,5	522,9	282,1	924,0	106,0	225,7
4,0	21,0	522,9	282,1	924,0	106,0	225,7
5,0	82,2	973,1	669,3	1719,6	132,5	535,4
6,0	82,2	1423,3	1056,4	2515,3	159,0	845,1
7,0	82,2	1873,6	1443,6	3310,9	185,6	1154,9
8,0	82,2	2323,8	1830,8	4106,5	212,1	1464,6
9,0	82,2	2323,8	2217,9	4106,5	238,6	1774,3
9,0	82,2	2323,8	2217,9	4106,5	238,6	1774,3
10,0	94,9	2413,7	2665,0	4265,3	265,1	2132,0
11,0	94,9	2503,5	3112,0	4424,1	291,6	2489,6
12,0	94,9	2593,4	3559,1	4582,9	318,1	2847,3
13,0	94,9	2683,3	4006,1	4741,7	344,6	3204,9
14,0	94,9	2683,3	4453,2	4741,7	371,1	3562,6
14,0	94,9	2683,3	4453,2	4741,7	371,1	3562,6
15,0	106,1	2762,5	4953,0	4881,7	397,6	3962,4
16,0	106,1	2841,6	5452,9	5021,6	424,1	4362,3
17,0	106,1	2920,8	5952,7	5161,5	450,6	4762,1
18,0	106,1	3000,0	6452,5	5301,4	477,1	5162,0
19,0	106,1	3000,0	6952,3	5301,4	503,6	5561,9
19,0	106,1	3000,0	6952,3	5301,4	503,6	5561,9
20,0	116,2	3071,6	7499,9	5427,9	530,1	5999,9
21,0	116,2	3143,2	8047,4	5554,4	556,7	6437,9
22,0	116,2	3214,8	8594,9	5680,9	583,2	6875,9
23,0	116,2	3286,3	9142,4	5807,4	609,7	7314,0
24,0	116,2	3286,3	9690,0	5807,4	636,2	7752,0
24,0	116,2	3286,3	9690,0	5807,4	636,2	7752,0
25,0	125,5	3352,2	10281,4	5923,8	662,7	8225,1
26,0	125,5	3418,0	10872,8	6040,1	689,2	8698,2
27,0	125,5	3483,8	11464,2	6156,4	715,7	9171,3
28,0	125,5	3549,6	12055,6	6272,7	742,2	9644,5
29,0	125,5	3549,6	12647,0	6272,7	768,7	10117,6
29,0	125,5	3549,6	12647,0	6272,7	768,7	10117,6
30,0	129,9	3580,8	13259,1	6327,8	795,2	10607,3
31,0	129,9	3611,9	13871,3	6382,8	821,7	11097,0
32,0	129,9	3643,1	14483,4	6437,9	848,2	11586,8
33,0	129,9	3674,2	15095,6	6492,9	874,7	12076,5
34,0	129,9	3674,2	15707,8	6492,9	901,2	12566,2
35,0	129,9	3674,2	16319,9	6492,9	927,8	13055,9
36,0	129,9	3674,2	16932,1	6492,9	954,3	13545,7
37,0	129,9	3674,2	17544,2	6492,9	980,8	14035,4
38,0	129,9	3674,2	18156,4	6492,9	1007,3	14525,1
39,0	129,9	3674,2	18768,5	6492,9	1033,8	15014,8
40,0	129,9	3674,2	19380,7	6492,9	1060,3	15504,6

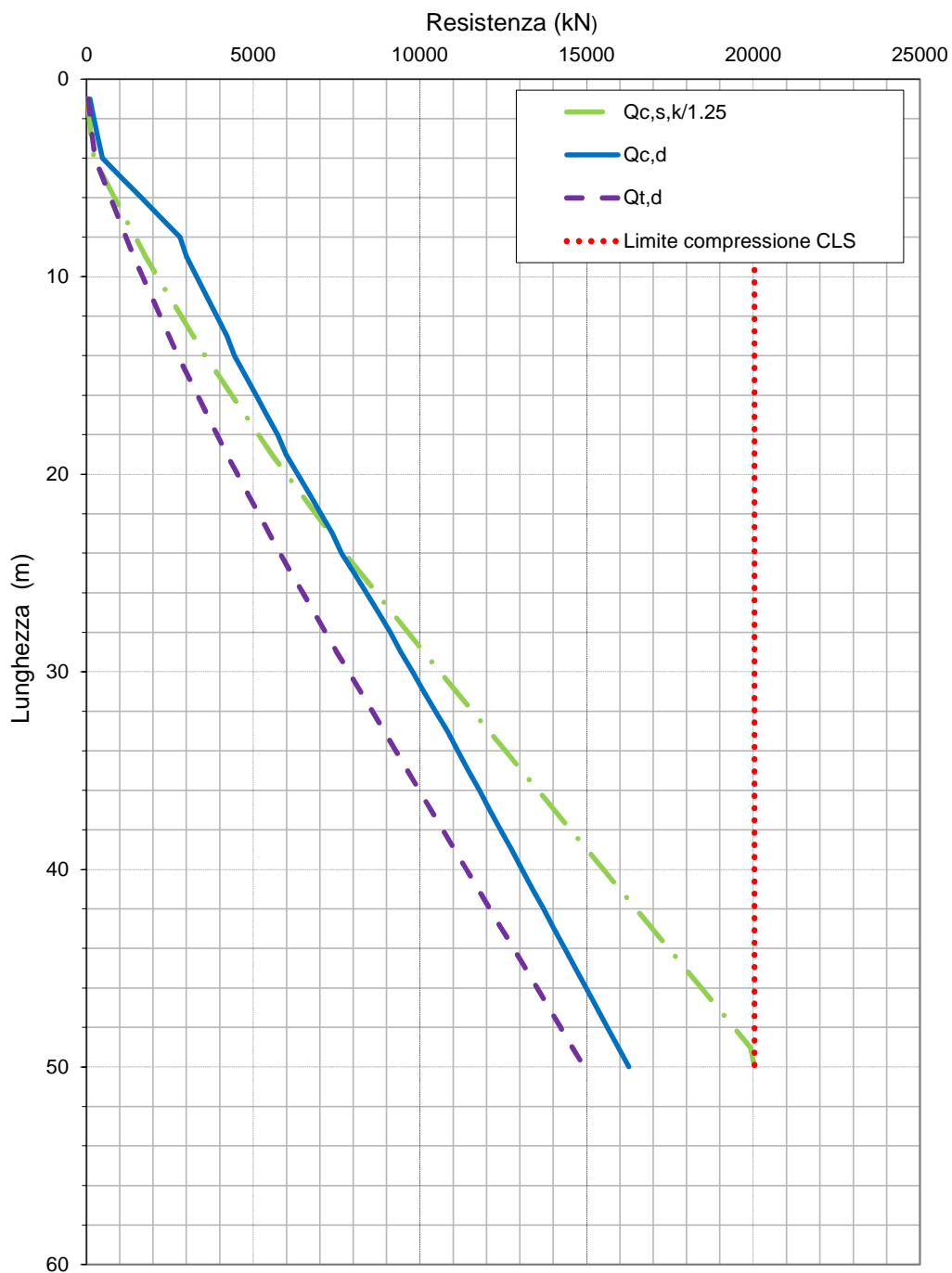
<b>APPALTATORE:</b> Consorzio <span style="margin-left: 100px;">Soci</span>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <span style="margin-left: 100px;">Mandanti</span>   	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	

Combinazione SLU A1+M1+R3 (metodo AGI)						
L_palo	Q <sub>I-c,k</sub>	Q <sub>b-c,k</sub>	Q <sub>I-c,d</sub>	Q <sub>b-c,d</sub>	ΔW_palo	Q <sub>c,d</sub>
m	kN	kN	kN	kN	kN	kN
1,0	49,4	231,0	28,6	114,1	34,5	108,2
2,0	112,8	462,0	65,4	228,2	68,9	224,7
3,0	190,4	693,0	110,4	342,2	103,4	349,2
4,0	282,1	924,0	163,5	456,3	137,8	482,0
4,0	282,1	924,0	163,5	456,3	137,8	482,0
5,0	669,3	1719,6	388,0	849,2	172,3	1064,9
6,0	1056,4	2515,3	612,4	1242,1	206,8	1647,8
7,0	1443,6	3310,9	836,9	1635,0	241,2	2230,6
8,0	1830,8	4106,5	1061,3	2027,9	275,7	2813,5
9,0	2217,9	4106,5	1285,8	2027,9	310,1	3003,5
9,0	2217,9	4106,5	1285,8	2027,9	310,1	3003,5
10,0	2665,0	4265,3	1544,9	2106,3	344,6	3306,6
11,0	3112,0	4424,1	1804,1	2184,7	379,1	3609,8
12,0	3559,1	4582,9	2063,2	2263,2	413,5	3912,9
13,0	4006,1	4741,7	2322,4	2341,6	448,0	4216,0
14,0	4453,2	4741,7	2581,6	2341,6	482,4	4440,7
14,0	4453,2	4741,7	2581,6	2341,6	482,4	4440,7
15,0	4953,0	4881,7	2871,3	2410,7	516,9	4765,1
16,0	5452,9	5021,6	3161,1	2479,8	551,3	5089,5
17,0	5952,7	5161,5	3450,8	2548,9	585,8	5413,9
18,0	6452,5	5301,4	3740,6	2618,0	620,3	5738,3
19,0	6952,3	5301,4	4030,3	2618,0	654,7	5993,6
19,0	6952,3	5301,4	4030,3	2618,0	654,7	5993,6
20,0	7499,9	5427,9	4347,7	2680,5	689,2	6339,0
21,0	8047,4	5554,4	4665,2	2742,9	723,6	6684,4
22,0	8594,9	5680,9	4982,6	2805,4	758,1	7029,9
23,0	9142,4	5807,4	5300,0	2867,9	792,6	7375,3
24,0	9690,0	5807,4	5617,4	2867,9	827,0	7658,2
24,0	9690,0	5807,4	5617,4	2867,9	827,0	7658,2
25,0	10281,4	5923,8	5960,2	2925,3	861,5	8024,0
26,0	10872,8	6040,1	6303,1	2982,8	895,9	8389,9
27,0	11464,2	6156,4	6645,9	3040,2	930,4	8755,7
28,0	12055,6	6272,7	6988,7	3097,7	964,9	9121,5
29,0	12647,0	6272,7	7331,6	3097,7	999,3	9429,9
29,0	12647,0	6272,7	7331,6	3097,7	999,3	9429,9
30,0	13259,1	6327,8	7686,5	3124,8	1033,8	9777,5
31,0	13871,3	6382,8	8041,3	3152,0	1068,2	10125,1
32,0	14483,4	6437,9	8396,2	3179,2	1102,7	10472,7
33,0	15095,6	6492,9	8751,1	3206,4	1137,2	10820,3
34,0	15707,8	6492,9	9105,9	3206,4	1171,6	11140,7
35,0	16319,9	6492,9	9460,8	3206,4	1206,1	11461,1
36,0	16932,1	6492,9	9815,7	3206,4	1240,5	11781,5
37,0	17544,2	6492,9	10170,6	3206,4	1275,0	12101,9
38,0	18156,4	6492,9	10525,4	3206,4	1309,5	12422,4
39,0	18768,5	6492,9	10880,3	3206,4	1343,9	12742,8
40,0	19380,7	6492,9	11235,2	3206,4	1378,4	13063,2

Comb. SLU A1+M1+R3 (metodo AGI)				
L_palo	Q <sub>I-t,k</sub>	Q <sub>I-t,d</sub>	ΔW_palo	Q <sub>t,d</sub>
m	kN	kN	kN	kN
1,0	49,4	26,3	26,5	52,8
2,0	112,8	60,2	53,0	113,2
3,0	190,4	101,6	79,5	181,1
4,0	282,1	150,5	106,0	256,5
4,0	282,1	150,5	106,0	256,5
5,0	669,3	356,9	132,5	489,5
6,0	1056,4	563,4	159,0	722,5
7,0	1443,6	769,9	185,6	955,5
8,0	1830,8	976,4	212,1	1188,5
9,0	2217,9	1182,9	238,6	1421,5
9,0	2217,9	1182,9	238,6	1421,5
10,0	2665,0	1421,3	265,1	1686,4
11,0	3112,0	1659,8	291,6	1951,3
12,0	3559,1	1898,2	318,1	2216,3
13,0	4006,1	2136,6	344,6	2481,2
14,0	4453,2	2375,0	371,1	2746,1
14,0	4453,2	2375,0	371,1	2746,1
15,0	4953,0	2641,6	397,6	3039,2
16,0	5452,9	2908,2	424,1	3332,3
17,0	5952,7	3174,8	450,6	3625,4
18,0	6452,5	3441,3	477,1	3918,5
19,0	6952,3	3707,9	503,6	4211,5
19,0	6952,3	3707,9	503,6	4211,5
20,0	7499,9	3999,9	530,1	4530,1
21,0	8047,4	4291,9	556,7	4848,6
22,0	8594,9	4584,0	583,2	5167,1
23,0	9142,4	4876,0	609,7	5485,6
24,0	9690,0	5168,0	636,2	5804,2
24,0	9690,0	5168,0	636,2	5804,2
25,0	10281,4	5483,4	662,7	6146,1
26,0	10872,8	5798,8	689,2	6488,0
27,0	11464,2	6114,2	715,7	6829,9
28,0	12055,6	6429,6	742,2	7171,8
29,0	12647,0	6745,1	768,7	7513,8
29,0	12647,0	6745,1	768,7	7513,8
30,0	13259,1	7071,5	795,2	7866,8
31,0	13871,3	7398,0	821,7	8219,7
32,0	14483,4	7724,5	848,2	8572,7
33,0	15095,6	8051,0	874,7	8925,7
34,0	15707,8	8377,5	901,2	9278,7
35,0	16319,9	8704,0	927,8	9631,7
36,0	16932,1	9030,4	954,3	9984,7
37,0	17544,2	9356,9	980,8	10337,7
38,0	18156,4	9683,4	1007,3	10690,7
39,0	18768,5	10009,9	1033,8	11043,7
40,0	19380,7	10336,4	1060,3	11396,7

<b>APPALTATORE:</b> Consorzio <b>HirpiniaAV</b> Soci <b>salini impregilo</b> <b>ASTALDI</b>		<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <b>ROKSOJL</b> Mandanti <b>NETENGINEERING</b> <b>Alpina</b>							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>		COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 45 di 354

VI04 - spalla SPA  
 Capacità portante A1+M1+R3  
 Palo D=1500mm



**Figura 9-1: Capacità portante del palo singolo**

<b>APPALTATORE:</b> Consorzio <b>HirpiniaAV</b> Soci <b>salini impregilo</b> <b>ASTALDI</b>	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <b>SOJL</b> Mandanti <b>NETENGINEERING</b> <b>Alpina</b>						
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 46 di 354

### 9.1.1 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 descritti nel documento di cui al Ref. 2) §6.2, con i metodi basati sulle curve p-y.

Considerata la presenza di successioni stratigrafiche abbastanza articolate, con contrasti di rigidezza anche marcati e caratteristiche diverse delle varie unità geotecniche, si è fatto uso del programma FEM non lineare LPile, considerando negli strati di terreno curve p-y non lineari, definibili lungo il fuso del palo, e opportunamente ridotte secondo il coefficiente parziale  $\xi \times \gamma_T$ .

Si ricava una curva "pushover" del palo singolo: incrementando progressivamente il carico orizzontale applicato alla testa del palo, fino al raggiungimento del collasso, vale a dire della completa plasticizzazione del terreno. Tale plasticizzazione si rende "visibile" attraverso il cambiamento del comportamento deformativo del palo stesso, al raggiungimento del "plateau" di resistenza.

Nella seguente Figura 9-2 è illustrata la curva push-over ottenuta per il palo in oggetto, con il vincolo di invastro, al crescere dell'azione H applicata alla testa dello stesso.

Il taglio massimo agente è pari a  $T_{longSLV} \approx 1907.6$  kN.

La verifica a capacità portante orizzontale risulta soddisfatta, poiché il carico limite  $H_{lim} = 3881$  kN risulta superiore al valore di progetto.

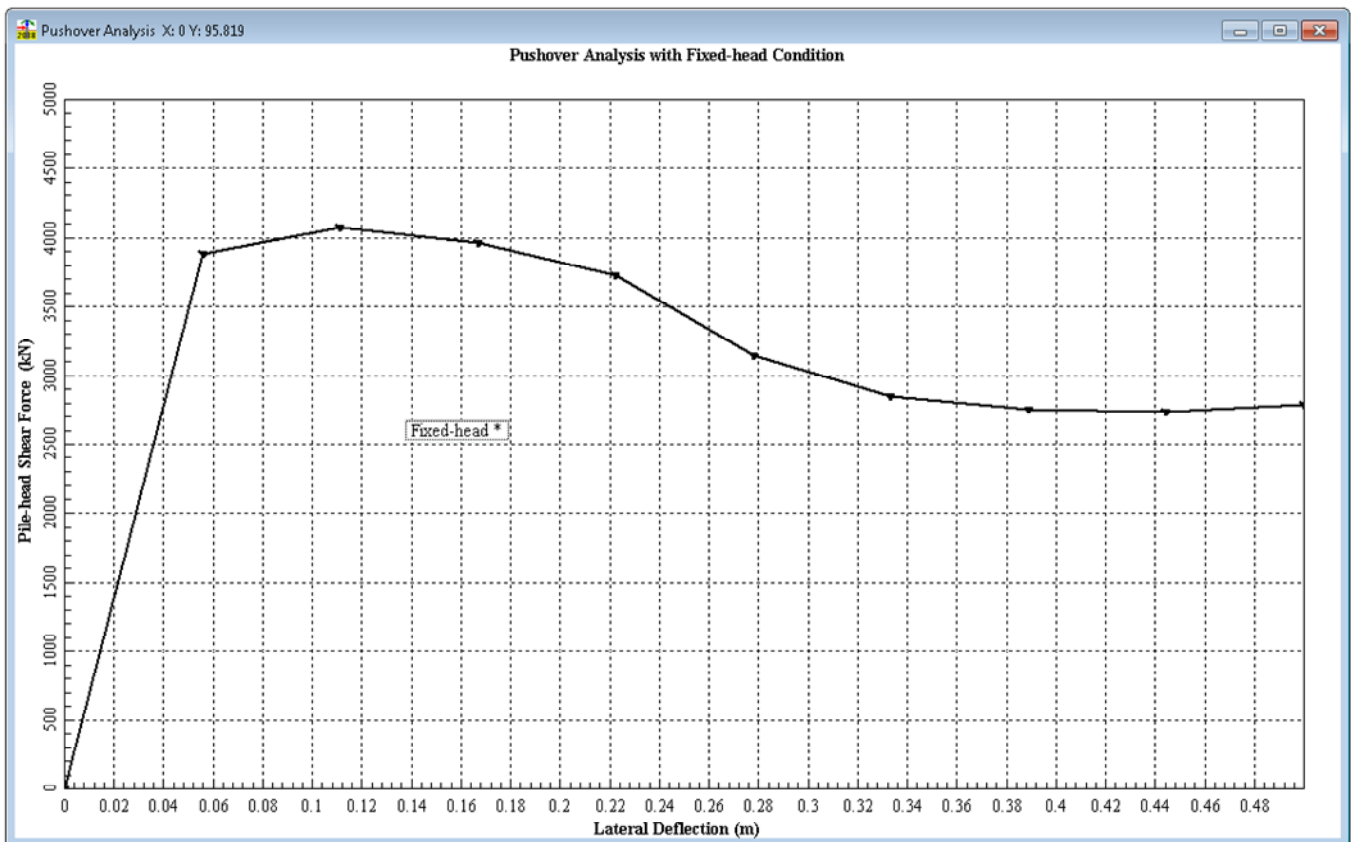


Figura 9-2: Analisi push-over palo

<b>APPALTATORE:</b> Consorzio <span style="margin-left: 100px;">Soci</span>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>																	
<b>PROGETTAZIONE:</b> Mandataria <span style="margin-left: 100px;">Mandanti</span>   	<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>IF28</td> <td>01</td> <td>E ZZ CL</td> <td>VI0403 001</td> <td>B</td> <td>47 di 354</td> </tr> </table>						COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF28	01	E ZZ CL	VI0403 001	B	47 di 354
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO													
IF28	01	E ZZ CL	VI0403 001	B	47 di 354													
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>																		

## 10 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).

### 10.1 DESCRIZIONE DEL MODELLO DI CALCOLO GROUP

Il modello di calcolo è stato costruito nel seguente modo:

<b>APPALTATORE:</b> Consorzio <span style="margin-left: 100px;">Soci</span>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>																	
<b>PROGETTAZIONE:</b> Mandataria <span style="margin-left: 100px;">Mandanti</span>   	<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>IF28</td> <td>01</td> <td>E ZZ CL</td> <td>VI0403 001</td> <td>B</td> <td>48 di 354</td> </tr> </table>						COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF28	01	E ZZ CL	VI0403 001	B	48 di 354
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO													
IF28	01	E ZZ CL	VI0403 001	B	48 di 354													
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>																		

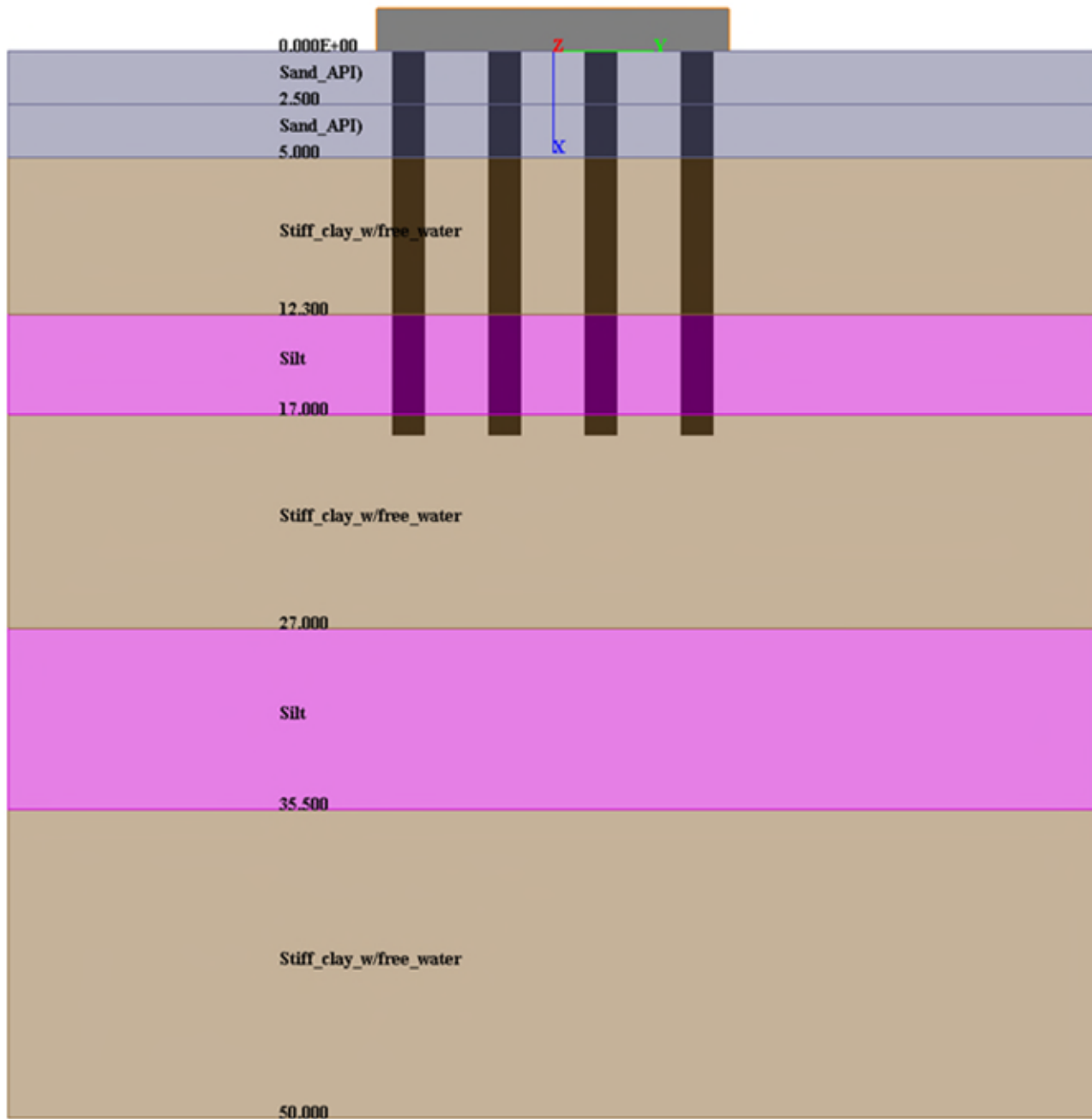



Figura 10-1: Vista frontale del modello GROUPv2016



<b>APPALTATORE:</b> Consorzio <span style="margin-left: 100px;">Soci</span>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>																	
<b>PROGETTAZIONE:</b> Mandataria <span style="margin-left: 100px;">Mandanti</span>   	<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>IF28</td> <td>01</td> <td>E ZZ CL</td> <td>VI0403 001</td> <td>B</td> <td>49 di 354</td> </tr> </table>						COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF28	01	E ZZ CL	VI0403 001	B	49 di 354
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO													
IF28	01	E ZZ CL	VI0403 001	B	49 di 354													
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>																		

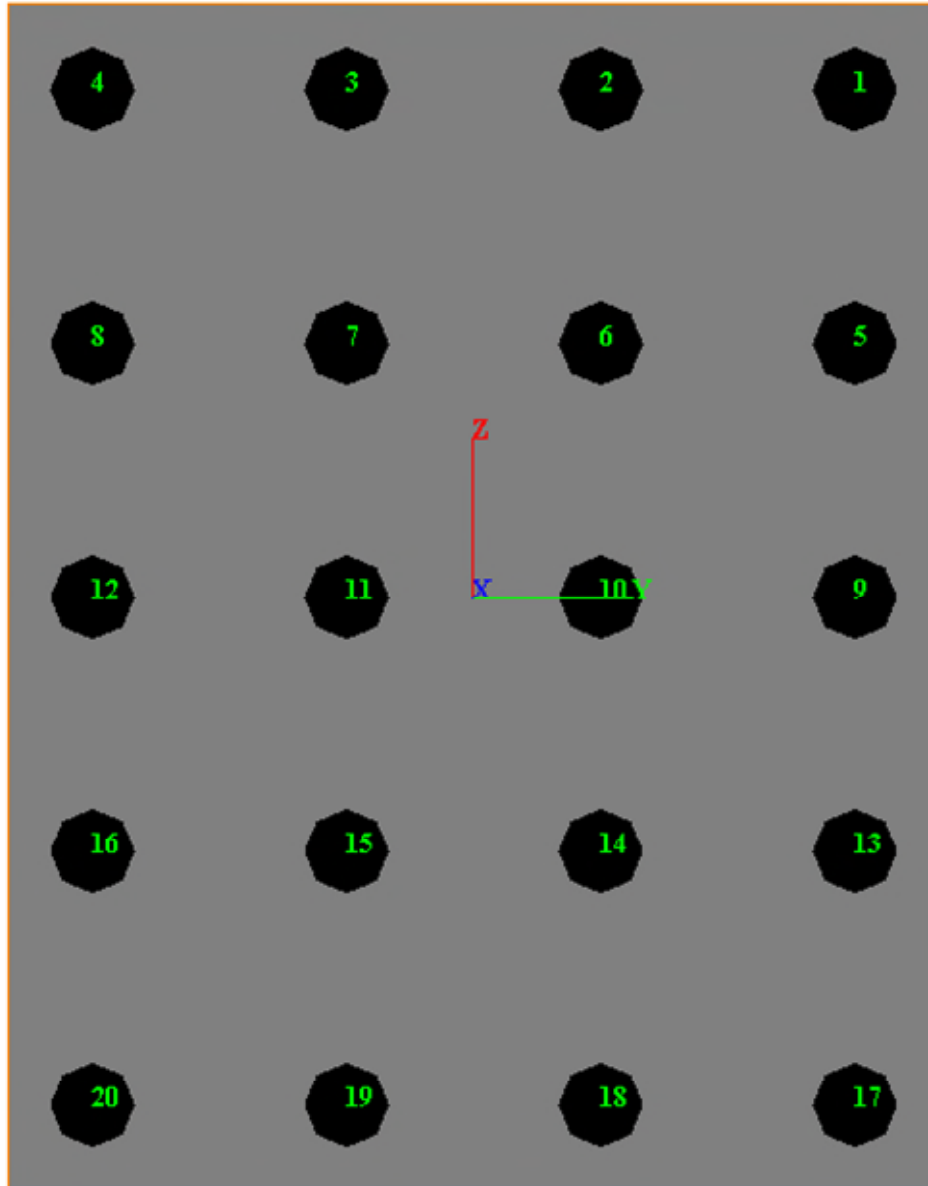


Figura 10-2: Vista in pianta del modello GROUPv2016

In accordo al § 4.2 nelle seguenti Figura 10-3 ÷ Figura 10-10 si riporta il modello stratigrafico di calcolo e i parametri geotecnici assegnati ai singoli strati. I parametri di rigidezza del terreno sono stati assunti in accordo ai criteri illustrati nella relazione al ref. 2), § 8.1.1 per le “stiff clays with free water”.

<b>APPALTATORE:</b> Consorzio <span style="margin-left: 100px;">Soci</span>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <span style="margin-left: 100px;">Mandanti</span>   	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	COMMESSA <span style="margin-left: 20px;">LOTTO</span> <span style="margin-left: 20px;">CODIFICA</span> <span style="margin-left: 20px;">DOCUMENTO</span> <span style="margin-left: 20px;">REV.</span> <span style="margin-left: 20px;">FOGLIO</span> IF28 <span style="margin-left: 20px;">01</span> <span style="margin-left: 20px;">E ZZ CL</span> <span style="margin-left: 20px;">VI0403 001</span> <span style="margin-left: 20px;">B</span> <span style="margin-left: 20px;">50 di 354</span>

Layer	Soil Type	Depth for Top of Soil Layer (m)	Depth for Bottom of Soil Layer (m)	Properties of Layer
1	API Sand (O'Neil)	0	2.5	1: API Sand
2	API Sand (O'Neil)	2.5	5	2: API Sand
3	Stiff Clay with Free Water (Reese)	5	12.3	3: Stiff Clay with Free Water
4	Silt (cemented c-phi)	12.3	17	4: Cemented c-phi Soil
5	Stiff Clay with Free Water (Reese)	17	27	5: Stiff Clay with Free Water
6	Silt (cemented c-phi)	27	35.5	6: Cemented c-phi Soil
7	Stiff Clay with Free Water (Reese)	35.5	50	7: Stiff Clay with Free Water

Buttons: Add Row, Insert Row, Delete Row

Figura 10-3: Modello stratigrafico GROUP V2016

1=Top, 2=Bottom	Effective Unit Weight (kN/m <sup>3</sup> )	Friction Angle (DEG.)	p-y Modulus, k (kN/m <sup>3</sup> )	Ultimate Unit Side Friction (kN/m <sup>2</sup> )	Ultimate Unit Tip Resistance (kN/m <sup>2</sup> )
1	9	38	33900	55	0
2	9	38	33900	55	0

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 10-4: Layer no.1 (ALL1-G)

<b>APPALTATORE:</b> Consorzio <span style="margin-left: 100px;">Soci</span> 	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <span style="margin-left: 100px;">Mandanti</span> 	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	COMMESSA <span style="margin-left: 20px;">LOTTO</span> <span style="margin-left: 20px;">CODIFICA</span> <span style="margin-left: 20px;">DOCUMENTO</span> <span style="margin-left: 20px;">REV.</span> <span style="margin-left: 20px;">FOGLIO</span> IF28 <span style="margin-left: 20px;">01</span> <span style="margin-left: 20px;">E ZZ CL</span> <span style="margin-left: 20px;">VI0403 001</span> <span style="margin-left: 20px;">B</span> <span style="margin-left: 20px;">51 di 354</span>

**API Sand 2**

1=Top, 2=Bottom	Effective Unit Weight (kN/m <sup>3</sup> )	Friction Angle (DEG.)	p-y Modulus, k (kN/m <sup>3</sup> )	Ultimate Unit Side Friction (kN/m <sup>2</sup> )	Ultimate Unit Tip Resistance (kN/m <sup>2</sup> )
1	9	29	25150	45	0
2	9	29	25150	45	0

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 10-5: Layer no.2 (ALL1-S)

**Stiff Clay with Free Water 3**

1=Top, 2=Bottom	Effective Unit Weight (kN/m <sup>3</sup> )	Undrained Cohesion, c (kN/m <sup>2</sup> )	p-y Modulus, k (kN/m <sup>3</sup> )	Strain Factor E50	Ultimate Unit Side Friction (kN/m <sup>2</sup> )	Ultimate Unit Tip Resistance (kN/m <sup>2</sup> )
1	10.5	120	135000	0.007	82.16	2323.8
2	10.5	120	135000	0.007	82.16	2323.8

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.

(K=55000 per analisi SLE)

Figura 10-6: Layer no.3 (BNA3)

**Cemented c-phi Soil 4**

1=Top, 2=Bottom	Effective Unit Weight (kN/m <sup>3</sup> )	Undrained Cohesion, c (kN/m <sup>2</sup> )	Friction Angle (DEG.)	p-y Modulus, k (kN/m <sup>3</sup> )	Strain Factor E50	Ultimate Unit Side Friction (kN/m <sup>2</sup> )	Ultimate Unit Tip Resistance (kN/m <sup>2</sup> )
1	10.5	10	33	125000	0.007	95	3056
2	10.5	10	33	125000	0.007	95	3056

This p-y model requires non-zero values for both cohesion and friction angle.



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

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.

(K=89000 per analisi SLE)

Figura 10-7: Layer no.4 (BNA3)

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	COMMESSA <b>LOTTO</b> <b>CODIFICA</b> <b>DOCUMENTO</b> <b>REV.</b> <b>FOGLIO</b> <b>IF28</b> <b>01</b> <b>E ZZ CL</b> <b>VI0403 001</b> <b>B</b> <b>52 di 354</b>

**Stiff Clay with Free Water 5**

1=Top, 2=Bottom	Effective Unit Weight (kN/m <sup>3</sup> )	Undrained Cohesion, c (kN/m <sup>2</sup> )	p-y Modulus, k (kN/m <sup>3</sup> )	Strain Factor E50	Ultimate Unit Side Friction (kN/m <sup>2</sup> )	Ultimate Unit Tip Resistance (kN/m <sup>2</sup> )
1	10.5	220	270000	0.005	111.24	3146.4
2	10.5	220	270000	0.005	111.25	3146.4

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.

(K=110000 per analisi SLE)

Figura 10-8: Layer no.5 (BNA3)

**Cemented c-phi Soil 6**

1=Top, 2=Bottom	Effective Unit Weight (kN/m <sup>3</sup> )	Undrained Cohesion, c (kN/m <sup>2</sup> )	Friction Angle (DEG.)	p-y Modulus, k (kN/m <sup>3</sup> )	Strain Factor E50	Ultimate Unit Side Friction (kN/m <sup>2</sup> )	Ultimate Unit Tip Resistance (kN/m <sup>2</sup> )
1	10.5	10	33	125000	0.007	167	4300
2	10.5	10	33	125000	0.007	167	4300

This p-y model requires non-zero values for both cohesion and friction angle.  
 A linear interpolation with depth will be used to compute values between the top and bottom of the layer.

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.

(K=89000 per analisi SLE)

Figura 10-9: Layer no.6 (BNA3)

**Stiff Clay with Free Water 7**

1=Top, 2=Bottom	Effective Unit Weight (kN/m <sup>3</sup> )	Undrained Cohesion, c (kN/m <sup>2</sup> )	p-y Modulus, k (kN/m <sup>3</sup> )	Strain Factor E50	Ultimate Unit Side Friction (kN/m <sup>2</sup> )	Ultimate Unit Tip Resistance (kN/m <sup>2</sup> )
1	10.5	300	540000	0.004	129.9	3674.2
2	10.5	300	540000	0.004	129.9	3674.2







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.

(K=220000 per analisi SLE)

Figura 10-10: Layer no.7 (ANZ 2a)

<b>APPALTATORE:</b> Consorzio <span style="margin-left: 100px;">Soci</span>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>																	
<b>PROGETTAZIONE:</b> Mandataria <span style="margin-left: 100px;">Mandanti</span>   	<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>IF28</td> <td>01</td> <td>E ZZ CL</td> <td>VI0403 001</td> <td>B</td> <td>53 di 354</td> </tr> </table>						COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF28	01	E ZZ CL	VI0403 001	B	53 di 354
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO													
IF28	01	E ZZ CL	VI0403 001	B	53 di 354													
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>																		

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

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

Si ricorda che per le analisi allo SLE (vedasi Ref. 2)) sono stati utilizzati per le curve p-y i coefficienti di rigidezza del terreno suggeriti dal programma per carichi ciclici; facendo riferimento alle Figura 10-3 ÷ Figura 10-10 sono stati utilizzati i valori evidenziati di lato.

SLE	FOR. X, KN	FOR.H, KN	MOM, KN-M	MOM X, KN- M
	*****	*****	*****	*****
max	3729,9	505,1	1280,0	-1,4
min	831,0	178,6	475,0	-2,4

**Tabella 27: 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.

<b>APPALTATORE:</b> Consorzio <span style="margin-left: 100px;">Soci</span> 		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <span style="margin-left: 100px;">Mandanti</span> 							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>		COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 54 di 354

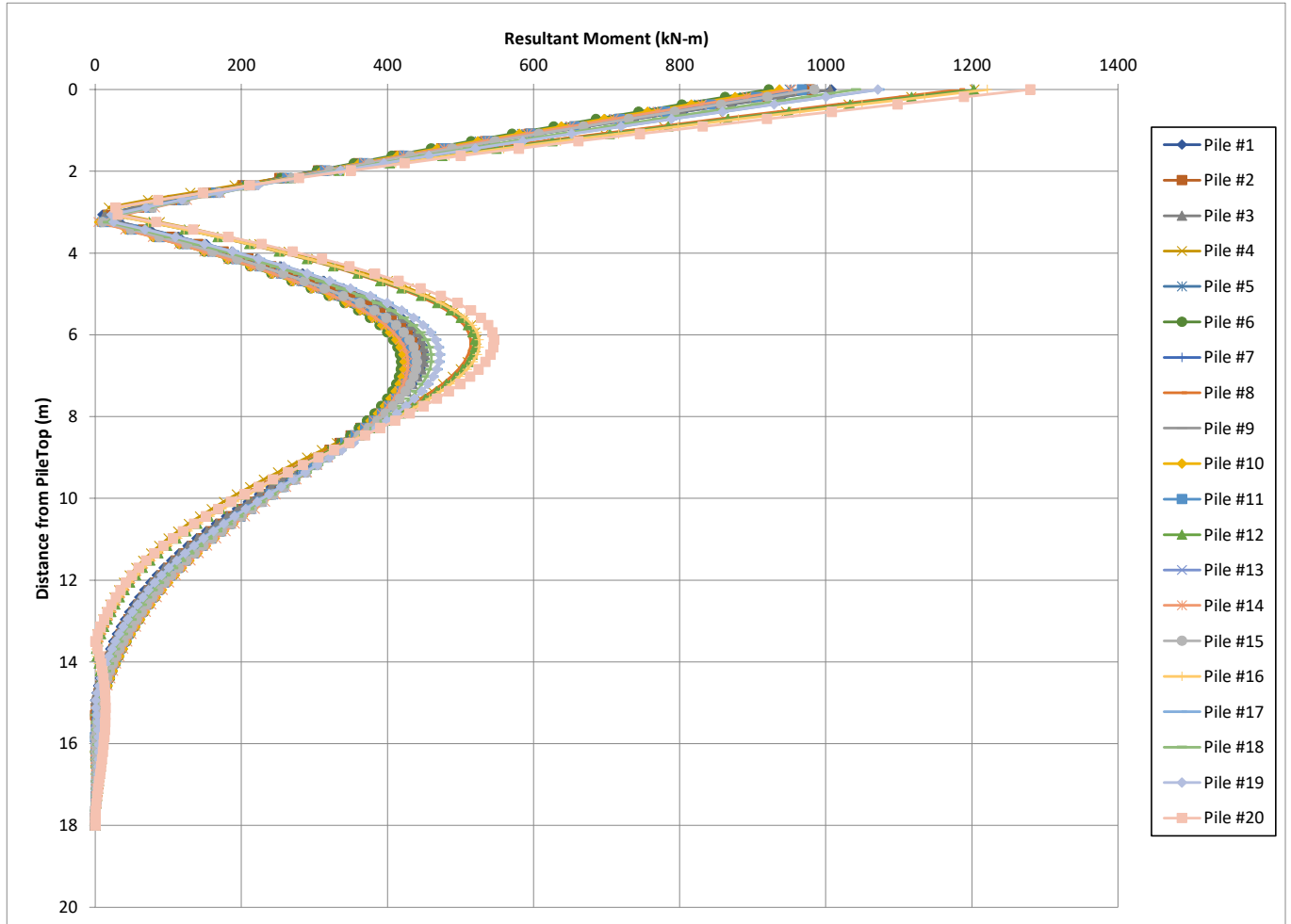


Figura 10-11: Combinazioni SLE: Andamento con la profondità del momento (combo SLE2-CH\_10).

<b>APPALTATORE:</b> Consorzio <span style="margin-left: 100px;">Soci</span> 		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <span style="margin-left: 100px;">Mandanti</span> 							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>		COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 55 di 354

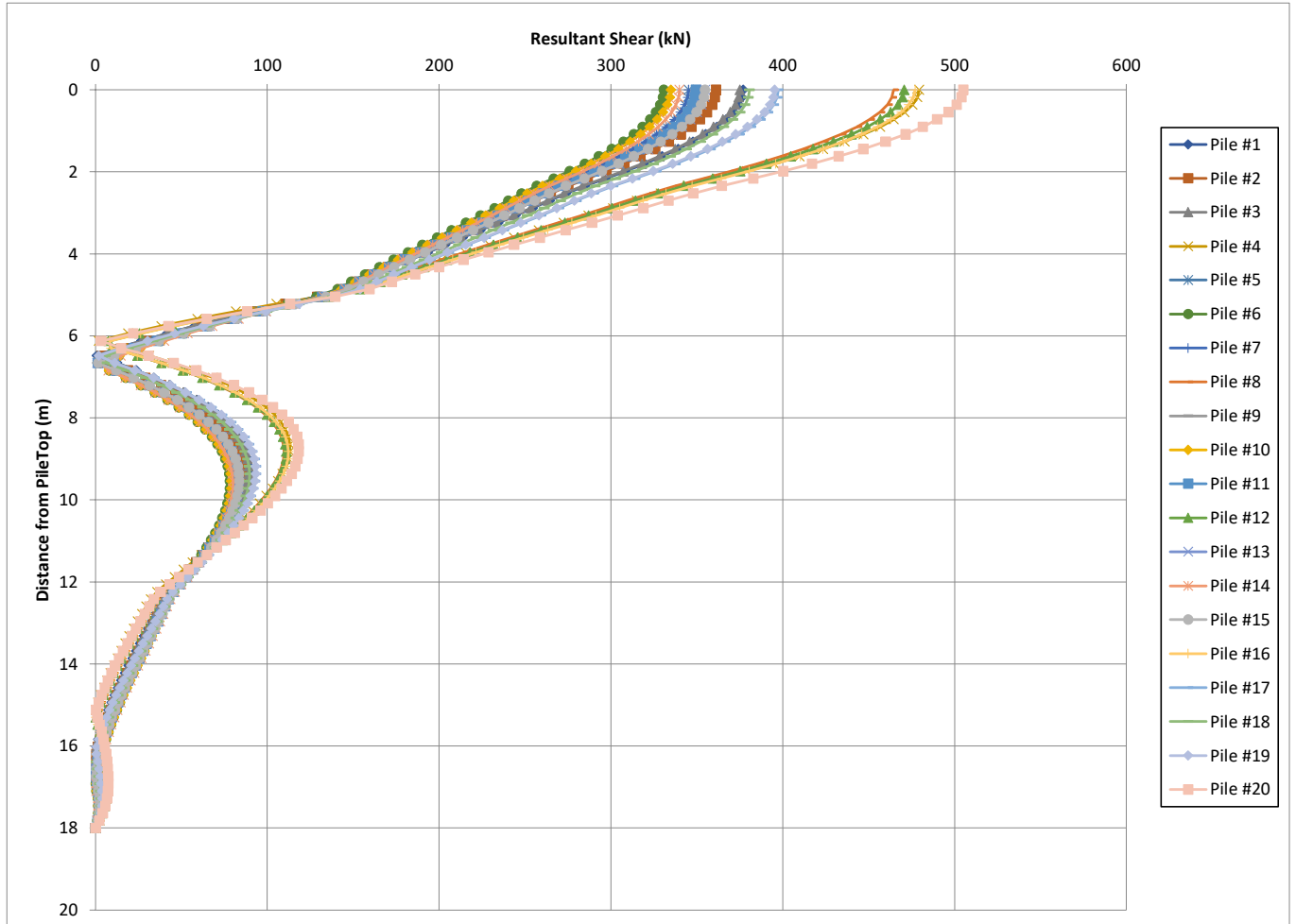




Figura 10-12: Combinazioni SLE: Andamento con la profondità del taglio (combo SLE1-CH\_10).

### 10.2.1 Spostamenti

Nella Tabella 16 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 17.

<b>APPALTATORE:</b> Consorzio <b>Soci</b> 	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b> 	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	COMMESSA <b>LOTTO</b> <b>CODIFICA</b> <b>DOCUMENTO</b> <b>REV.</b> <b>FOGLIO</b> <b>IF28</b> <b>01</b> <b>E ZZ CL</b> <b>VI0403 001</b> <b>B</b> <b>56 di 354</b>

VERTICAL , M	HORIZONTAL Y, M	HORIZONTAL Z, M	ANGLE ROT. X,RAD	ANGLE ROT. Y,RAD	ANGLE ROT. Z,RAD	Spostamento spalla - sle		
						H spalla (m)	7,85	
						asse Y (mm)	asse Z (mm)	asse X (mm)
0,0014843	-0,0011978	0,0001569	-5,094E-06	6,456E-06	9,026E-05	-1,906	0,208	2,905
0,0014920	-0,0021266	0,0001579	-5,251E-06	6,470E-06	1,375E-04	-3,206	0,209	2,920
0,0014153	-0,0018758	0,0001365	-3,931E-06	5,826E-06	1,094E-04	-2,735	0,182	2,770
0,0015249	-0,0020238	0,0002224	-6,909E-06	1,092E-05	1,278E-04	-3,027	0,308	2,984
0,0013242	-0,0014285	0,0001773	-4,635E-06	7,627E-06	8,018E-05	-2,058	0,237	2,592
0,0015097	-0,0012661	0,0002206	-6,866E-06	1,070E-05	8,947E-05	-1,968	0,305	2,955
0,0015097	-0,0012661	0,0002206	-6,866E-06	1,070E-05	8,947E-05	-1,968	0,305	2,955
0,0014153	-0,0018758	0,0001365	-3,931E-06	5,826E-06	1,094E-04	-2,735	0,182	2,770
0,0013242	-0,0014285	0,0001773	-4,635E-06	7,627E-06	8,017E-05	-2,058	0,237	2,592
0,0014920	-0,0021266	0,0001579	-5,251E-06	6,470E-06	1,375E-04	-3,206	0,209	2,920
0,0015249	-0,0020238	0,0002224	-6,909E-06	1,092E-05	1,278E-04	-3,027	0,308	2,984
0,0014153	-0,0018758	0,0001365	-3,931E-06	5,826E-06	1,094E-04	-2,735	0,182	2,770

Tabella 28: Combinazioni SLE: spostamenti e rotazioni ad intradosso plinto.

DATI FONDAZIONE		
Larghezza plinto	16,5	m
Profondità plinto	21	m
Diametro palo	1,5	m
Lunghezza palo	18	m
interasse palo	4,5	m
numero pali	20	-
Coefficiente R	2,24	-
Coefficiente RG	0,10	-
Coeff. amplificazione cedimento del gruppo EG	1,96	-

Tabella 29: Coefficiente amplificativo del cedimento verticale per effetto gruppo.

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

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

SLU	FOR. X, KN	FOR.H, KN	MOM, KN-M	MOM X, KN-M
	*****	*****	*****	*****
max	5023,0	703,2	1740,5	-2,1
min	695,0	161,8	364,4	-3,7

Tabella 30: 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.



<b>APPALTATORE:</b> Consorzio <span style="margin-left: 100px;">Soci</span> 		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <span style="margin-left: 100px;">Mandanti</span> 							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>		COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 57 di 354

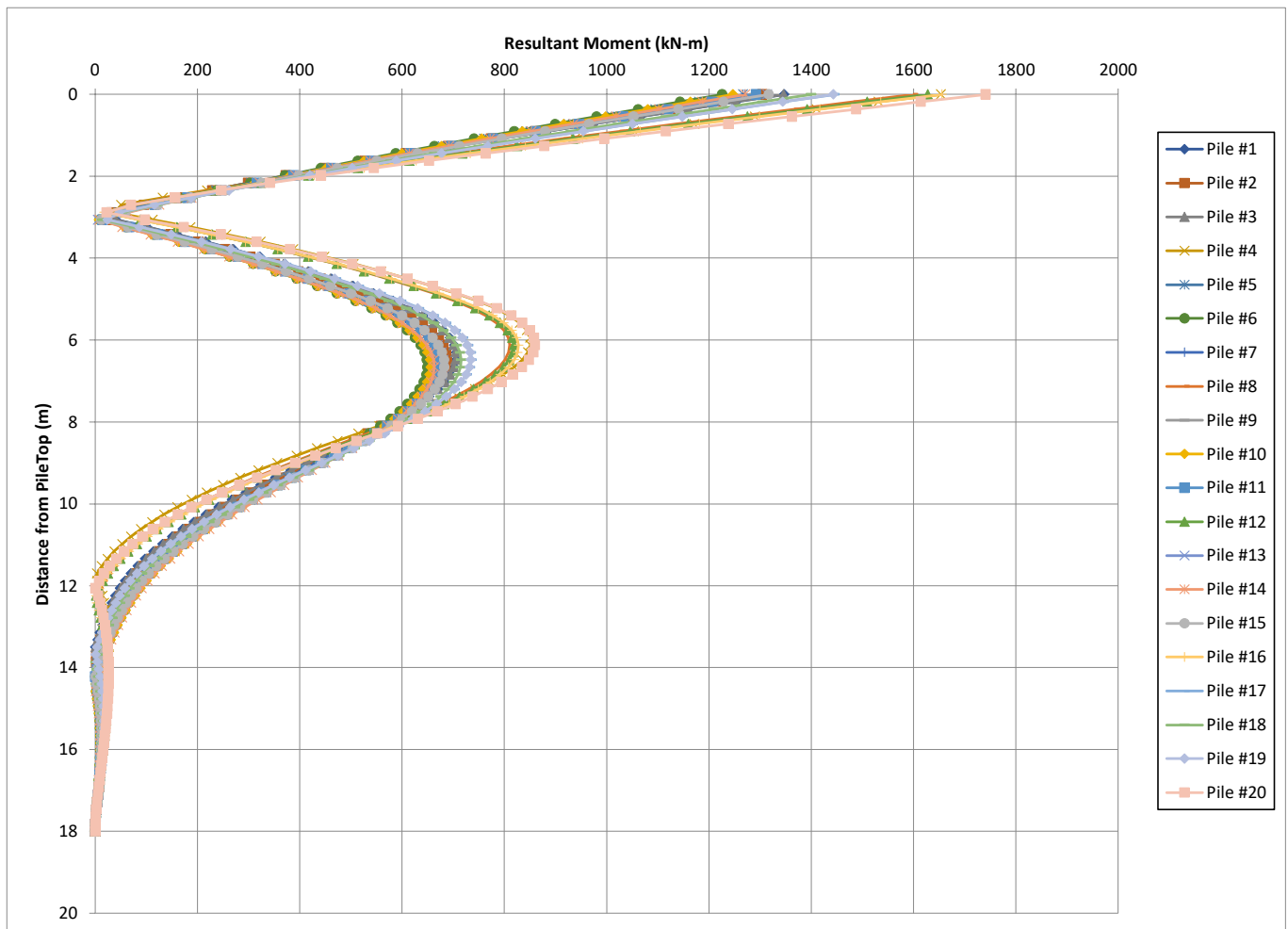


Figura 10-13: Combinazioni statica SLU: Andamento con la profondità del momento (combo 2-ULS\_09).

<b>APPALTATORE:</b> Consorzio <span style="margin-left: 100px;">Soci</span> 		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <span style="margin-left: 100px;">Mandanti</span> 							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>		COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 58 di 354

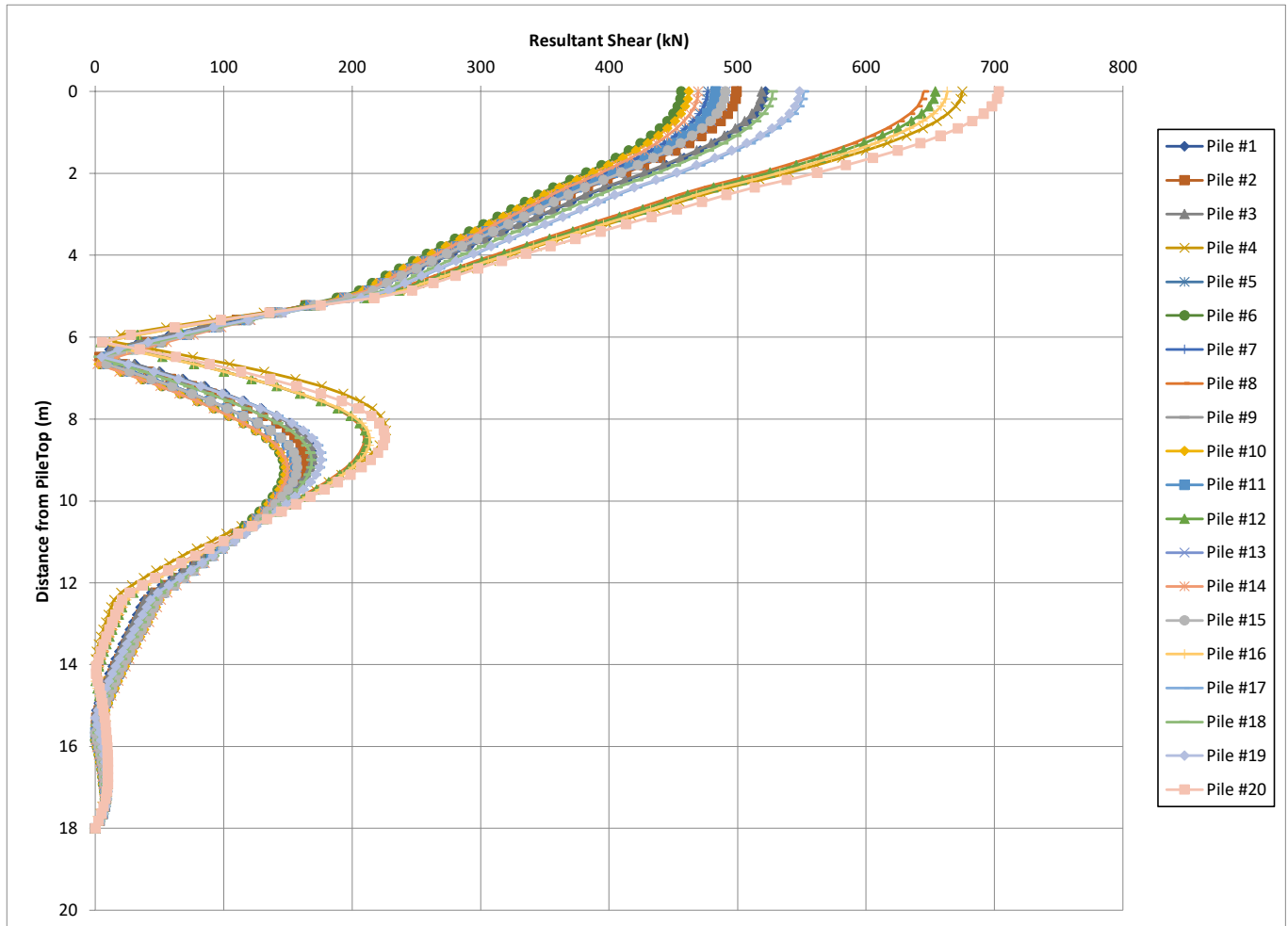


Figura 10-14: Combinazioni statica SLU: Andamento con la profondità del taglio (combo 2-ULS\_09).

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

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

SLV	FOR. X, KN	FOR.H, KN	MOM, KN-M	MOM X, KN- M
max	5761,6	2319,4	7033,5	23,8
min	-2566,4	11,3	99,7	-24,8

Tabella 31: 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.

<b>APPALTATORE:</b> Consorzio <b>HirpiniaAV</b> Soci <b>salini impregilo</b> <b>ASTALDI</b>		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <b>ROKSOJL</b> Mandanti <b>NETENGINEERING</b> <b>Alpina</b>							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>		COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 59 di 354

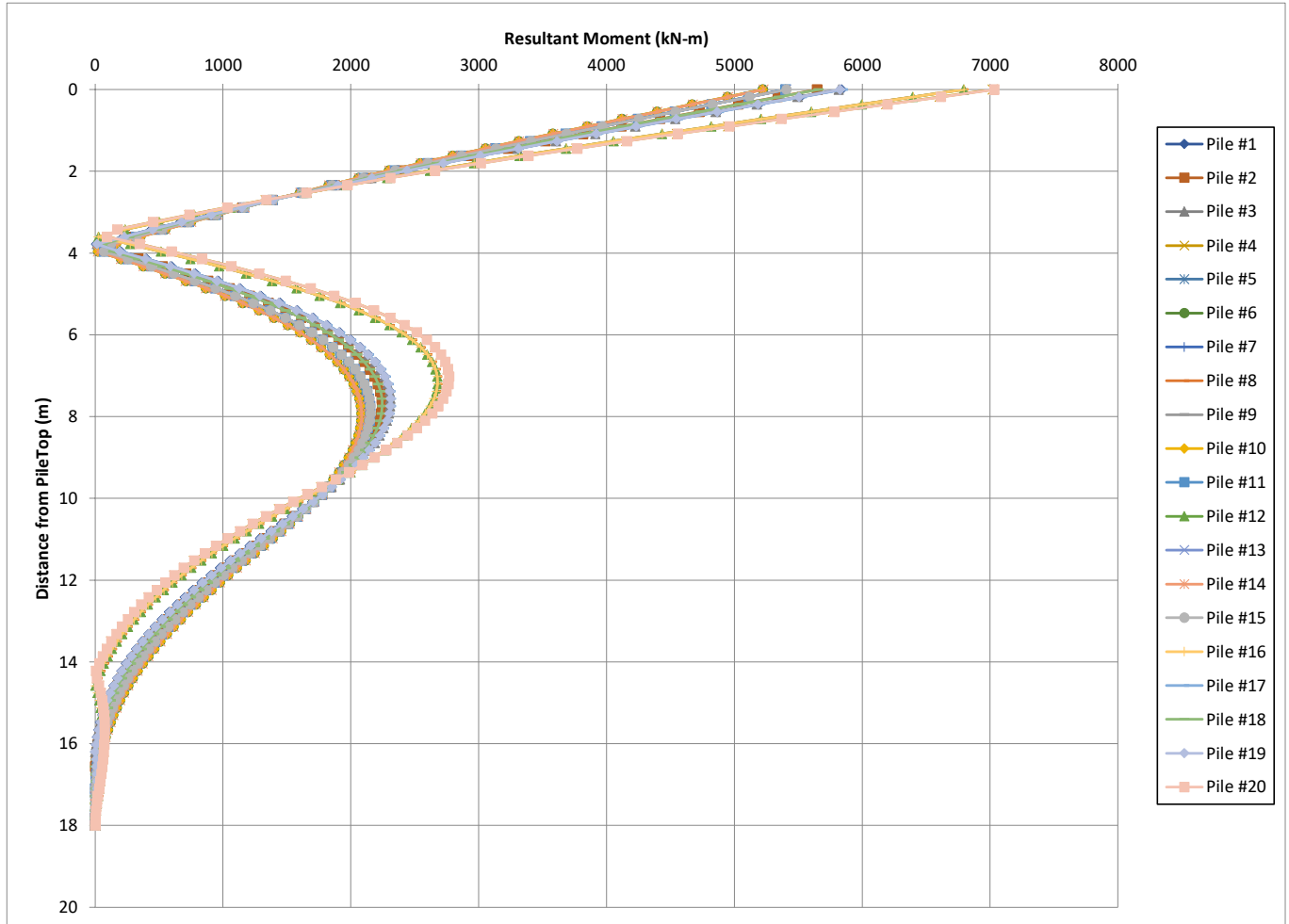


Figura 10-15: Combinazioni sismica SLV: Andamento con la profondità del momento (combo 14- ULS\_V\_05).

<b>APPALTATORE:</b> Consorzio <span style="margin-left: 100px;">Soci</span> 		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <span style="margin-left: 100px;">Mandanti</span> 							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>		COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 60 di 354

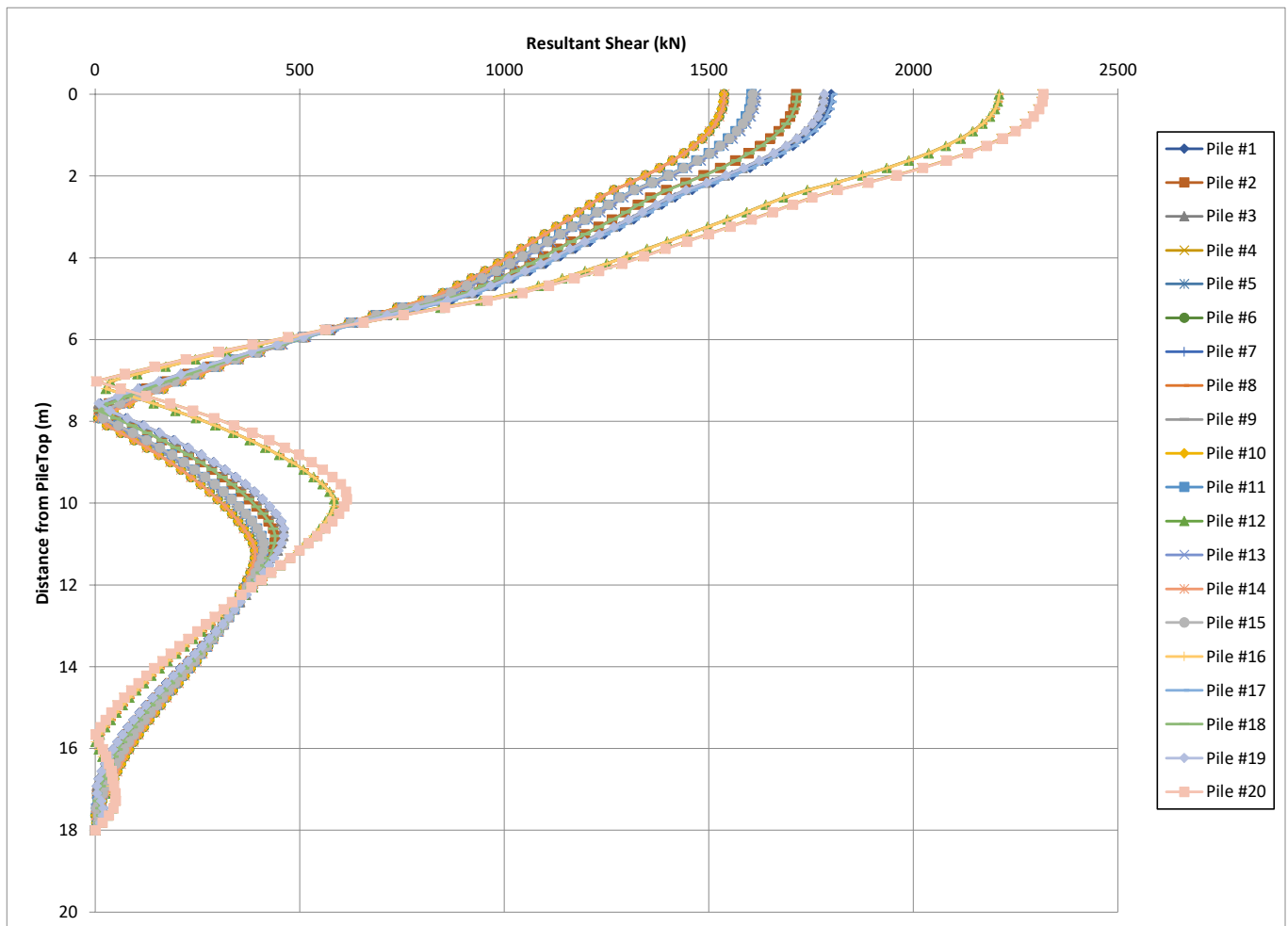








Figura 10-16: Combinazioni sismica SLV: Andamento con la profondità del taglio (combo 22- ULS\_V\_08).

<b>APPALTATORE:</b> Consorzio  Soci  	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria  Mandanti  						
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 61 di 354

## 11 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 32.

LOAD CASE :	PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M	FOR.H, KN	MOM, KN-M
*****	*****	*****	*****	*****	*****	*****	*****		
SLV-14	17	-2566,4	-1802,1	3,2645	-0,499	-9,7243	-5849	1802,10	5849,01
SLV-14	20	5536,3	-2317,9	8,1052	-0,499	-24,775	-7033,5	2317,91	7033,54
SLV-22	20	5750,2	-2319,4	8,1061	-0,501	-24,811	-7006,3	2319,41	7006,34

LOAD CASE :	PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M	FOR.H, KN	MOM, KN-M
*****	*****	*****	*****	*****	*****	*****	*****		
2_SLE	17	831,0							
2_SLE	20					-135,56	-1272,8		1280,00

Tabella 32: 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 L18m. Per le verifiche si considerano le sollecitazioni risultanti. I pali di fondazione risultano sempre compressi; le verifiche di armatura sono state eseguite associando alle massime sollecitazioni di taglio e momento il contributo di compressione minimo.

In riferimento all'andamento dei momenti lungo il fusto del palo- Momenti Figura 7-15 e Taglio Figura 7-16 - sono state previste n. 3 ordini di armature principali:

1. L'armatura massima:
  - o ferri correnti: corona esterna n.26  $\varnothing 30$ ;
  - o ferri correnti: corona interna n.26  $\varnothing 30$ ;
  - o staffatura: doppia spirale  $\varnothing 12$  passo 10.
  
2. L'armatura minima:
  - o ferri correnti: corona esterna n.26  $\varnothing 30$ ;
  - o staffatura: spirale  $\varnothing 12$  passo 20.

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

<b>APPALTATORE:</b> Consorzio <b>HirpiniaAV</b> Soci <b>salini impregilo</b> <b>ASTALDI</b>	<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <b>ROKSOJL</b> Mandanti <b>NETENGINEERING</b> <b>Alpina</b>						
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	COMMESSA <b>IF28</b>	LOTTO <b>01</b>	CODIFICA <b>E ZZ CL</b>	DOCUMENTO <b>VI0403 001</b>	REV. <b>B</b>	FOGLIO <b>62 di 354</b>

geometria				
sezione trasversale				
D	c	d	passo	interferro
[cm]	[cm]	[cm]	[cm]	[cm]
<b>150</b>	<b>6,0</b>	141,3	16,0	13,0
armatura longitudinale				
n <sub>barre</sub>	φ	r <sub>i</sub>	A <sub>sl</sub>	c <sub>i</sub>
	[mm]	[cm]	[cm <sup>2</sup> ]	[cm]
<b>26</b>	<b>30</b>	66,30	183,78	8,70
<b>26</b>	<b>30</b>	59,30	183,78	15,70
armatura a taglio				
Tipo	φ	p	A <sub>sw</sub>	
	[mm]	[cm]	[cm <sup>2</sup> ]	
<b>spirale</b>	<b>12</b>	<b>5</b>	2,26	

sollecitazioni e risultati	
SLE	SLU
M <sub>Ek</sub> <b>1280,0</b> [kNm]	M <sub>Ed</sub> <b>5849,0</b> [kNm]
N <sub>Ek</sub> <b>-831,0</b> [kN]	N <sub>Ed</sub> <b>2566,4</b> [kN]
	V <sub>Ed</sub> <b>2319,4</b> [kN]
momento di cracking	presso-flessione
M <sub>cr</sub> 1187,3 [kNm]	M <sub>Rd</sub> 6276,3 [kNm]
quota asse neutro	FS 1,07
y <sub>n</sub> 63,92 [cm]	taglio
tensioni e fessure	V <sub>Rdc</sub> 395,2 [kN]
σ <sub>c,min</sub> -4,0 [MPa]	predisporre armatura a taglio
σ <sub>s,min</sub> -51,9 [MPa]	
σ <sub>s,max</sub> 72,9 [MPa]	
	V <sub>Rds</sub> 2835,4 [kN]
k <sub>2</sub> <b>0,5</b>	V <sub>Rdmax</sub> 4487,1 [kN]
ε <sub>sm-ε<sub>cm</sub></sub> 0,20 [%]	θ 30,0 [°]
S <sub>r,max</sub> 35,9 [cm]	sezione duttile
w <sub>k</sub> 0,07189 [mm]	a <sub>i</sub> 93,2 [cm]

materiali			
calcestruzzo		acciaio	
R <sub>ck</sub>	<b>30</b> [MPa]	f <sub>yk</sub>	<b>450</b> [MPa]
f <sub>ck</sub>	24,9 [MPa]	γ <sub>s</sub>	<b>1,15</b>
γ <sub>c</sub>	<b>1,5</b>	f <sub>yd</sub>	391,3 [MPa]
α <sub>cc</sub>	<b>0,85</b>	E <sub>s</sub>	<b>200000</b> [MPa]
f <sub>cd</sub>	14,1 [MPa]	ε <sub>uk</sub>	<b>10</b> [%]
v	<b>0,5</b>		
ε <sub>c2</sub>	<b>2,0</b> [%]		
ε <sub>cu2</sub>	<b>3,5</b> [%]		
α <sub>e</sub>	<b>15,0</b>		
k <sub>t</sub>	<b>0,6</b>		
k <sub>1</sub>	<b>0,8</b>		
k <sub>3</sub>	<b>3,4</b>		
k <sub>4</sub>	<b>0,425</b>		
		valori limite	
		0,55 f <sub>ck</sub>	13,7 [MPa]
		0,75 f <sub>yk</sub>	337,5 [MPa]
		w <sub>k,lim</sub>	<b>0,2</b> [mm]

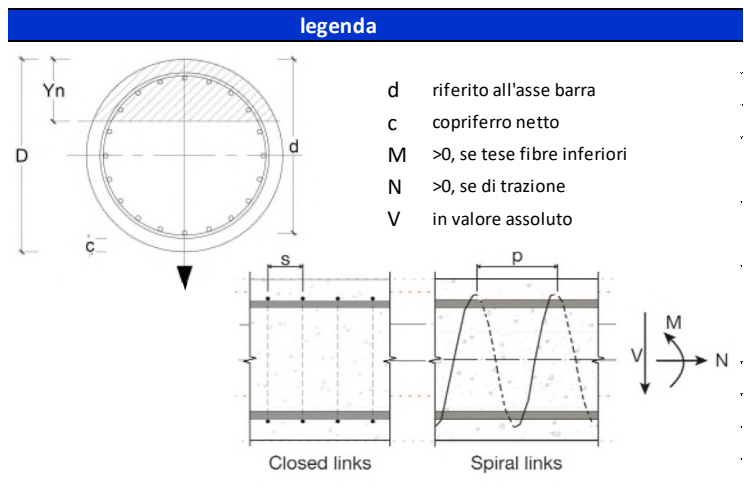


Tabella 11-33: Verifica del palo D=1500mm; trazione e armatura massima

<b>APPALTATORE:</b> Consorzio <b>HirpiniaAV</b> Soci <b>salini impregilo</b> <b>ASTALDI</b>	<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <b>ROKSOJL</b> Mandanti <b>NETENGINEERING</b> <b>Alpina</b>	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	
COMMESSA <b>IF28</b> LOTTO <b>01</b> CODIFICA <b>E ZZ CL</b> DOCUMENTO <b>VI0403 001</b> REV. <b>B</b> FOGLIO <b>63 di 354</b>	

geometria				
sezione trasversale				
D	c	d	passo	interferro
[cm]	[cm]	[cm]	[cm]	[cm]
<b>150</b>	<b>6,0</b>	141,3	16,0	13,0
armatura longitudinale				
n <sub>barre</sub>	φ	r <sub>i</sub>	A <sub>sl</sub>	c <sub>i</sub>
	[mm]	[cm]	[cm <sup>2</sup> ]	[cm]
<b>26</b>	<b>30</b>	66,30	183,78	8,70
60,80				
armatura a taglio				
Tipo	φ	ρ	A <sub>sw</sub>	
	[mm]	[cm]	[cm <sup>2</sup> ]	
<b>spirale</b>	<b>12</b>	<b>20</b>	2,26	

sollecitazioni e risultati	
SLE	SLU
M <sub>EK</sub> <b>1280,0</b> [kNm]	M <sub>Ed</sub> <b>2659,5</b> [kNm]
N <sub>EK</sub> <b>-831,0</b> [kN]	N <sub>Ed</sub> <b>2566,4</b> [kN]
<b>momento di cracking</b>	
M <sub>cr</sub> 1046,2 [kNm]	
<b>quota asse neutro</b>	
y <sub>n</sub> 55,79 [cm]	
<b>tensioni e fessure</b>	
σ <sub>c,min</sub> -5,4 [MPa]	
σ <sub>s,min</sub> -67,5 [MPa]	
σ <sub>s,max</sub> 123,1 [MPa]	
<b>prezzo-flessione</b>	
M <sub>Rd</sub> 2790,6 [kNm]	
FS 1,05	
<b>taglio</b>	
V <sub>Rdc</sub> 238,8 [kN]	
predisporre armatura a taglio	
V <sub>Rds</sub> 708,1 [kN]	
V <sub>Rdmax</sub> 4487,1 [kN]	
θ 30,0 [°]	
sezione duttile	
a <sub>i</sub> 90,2 [cm]	

materiali			
calcestruzzo		acciaio	
R <sub>ck</sub>	<b>30</b> [MPa]	f <sub>yk</sub>	<b>450</b> [MPa]
f <sub>ck</sub>	24,9 [MPa]	γ <sub>s</sub>	<b>1,15</b>
γ <sub>c</sub>	<b>1,5</b>	f <sub>yd</sub>	391,3 [MPa]
α <sub>cc</sub>	<b>0,85</b>	E <sub>s</sub>	<b>200000</b> [MPa]
f <sub>cd</sub>	14,1 [MPa]	ε <sub>uk</sub>	<b>10</b> [‰]
v	<b>0,5</b>		
ε <sub>c2</sub>	<b>2,0</b> [‰]		
ε <sub>cu2</sub>	<b>3,5</b> [‰]		
α <sub>e</sub>	<b>15,0</b>		
k <sub>t</sub>	<b>0,6</b>		
k <sub>1</sub>	<b>0,8</b>	<b>valori limite</b>	
k <sub>3</sub>	<b>3,4</b>	0,55 f <sub>ck</sub>	13,7 [MPa]
k <sub>4</sub>	<b>0,425</b>	0,75 f <sub>yk</sub>	337,5 [MPa]
		w <sub>k,lim</sub>	<b>0,2</b> [mm]

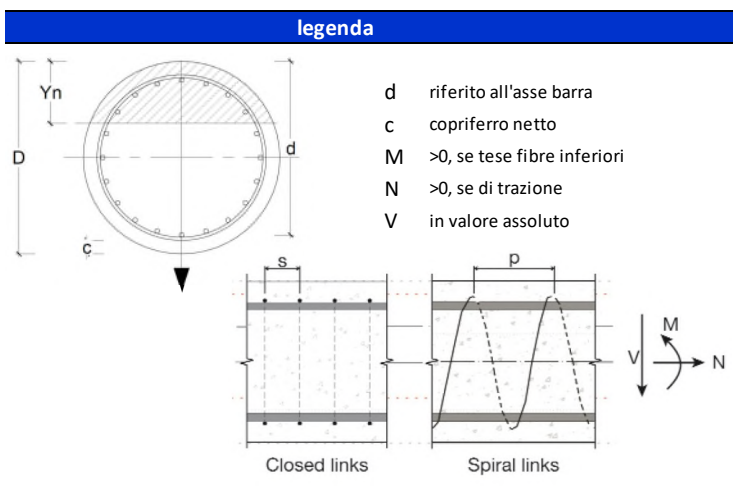








Tabella 11-34: Verifica del palo D=1500mm; armatura minima

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   						
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 64 di 354

### 11.1.1 Schemi armatura e incidenza del palo

Nelle Figura 11-1 e Figura 11-2 sono schematizzate le armature correnti e le armature di taglio. Nella Tabella 11-35 l'incidenza di armatura valutata con una percentuale di incremento pari al 10% dovuta a ganci di sollevamento, armature di confezionamento, legatura, ecc.; si considera una incidenza di progetto pari a 160kg/m<sup>3</sup>.

Tabella ferri						
ARMATURA PALO LUNGH. = 20 m – SP B						
POS.	N.	DIAM.	LUNG. (cm)	P.U.	LUNG. TOT. (cm)	PESO (kg)
1	26	30	1200	5,549	31200	1731
2	26	30	1200	5,549	31200	1731
3	26	30	940	5,549	24440	1356
3	1	12	42917	0,888	42917	381
4	1	12	22321	0,888	22321	198
5	1	12	15895	0,888	15895	141
7	18	40	450	9,864	8100	799

**Kg 6338**

AREA PALO (m<sup>2</sup>) **1,77**  
 LUNGH. PALO (m) **18,00**  
 VOLUME (m<sup>3</sup>) **31,79**

INCIDENZA DI CALCOLO (kg/m<sup>3</sup>) **199,3**

Incremento percentuale % (\*) **10**

INCIDENZA DI PROGETTO (kg/m<sup>3</sup>) **~230**

(\*) incremento in % dovuto a ganci di sollevamento, armature di confezionamento, legature, ecc.

Tabella 11-35 Incidenza armatura



<b>APPALTATORE:</b> Consorzio <b>HirpiniaAV</b> Soci <b>salini impregilo</b> <b>ASTALDI</b>		<b>ITINERARIO NAPOLI – BARI</b>					
<b>PROGETTAZIONE:</b> Mandataria <b>ROKSOJL</b> Mandanti <b>NETENGINEERING</b> <b>Alpina</b>		<b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>		COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 65 di 354

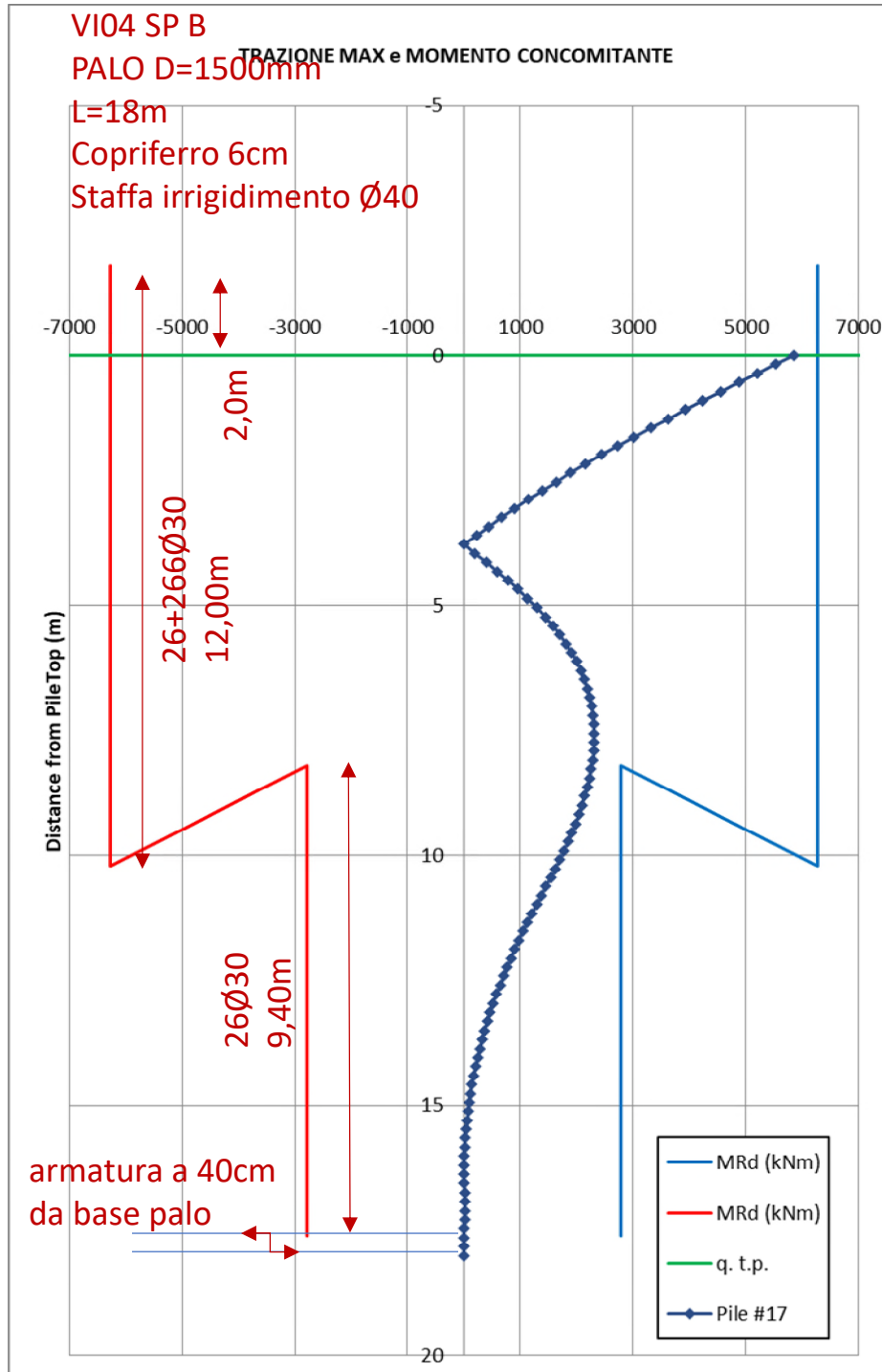


Figura 11-1: VI04 SP B Schema armatura gabbie

<b>APPALTATORE:</b> Consorzio <b>HirpiniaAV</b> Soci <b>salini impregilo</b> <b>ASTALDI</b>		<b>ITINERARIO NAPOLI – BARI</b>					
<b>PROGETTAZIONE:</b> Mandataria <b>ROKSOJL</b> Mandanti <b>NETENGINEERING</b> <b>Alpina</b>		<b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>		COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 66 di 354

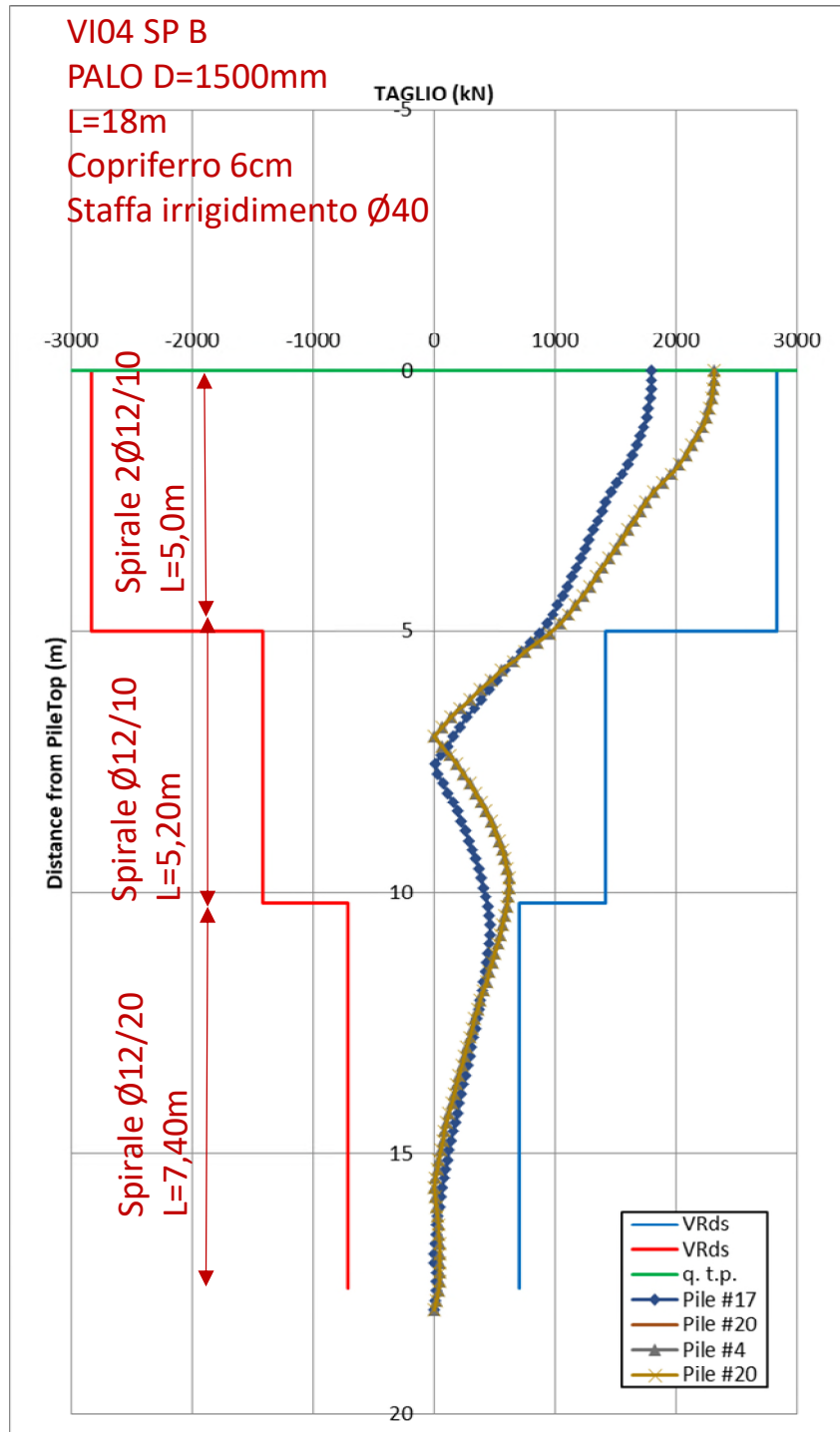







Figura 11-2: VI04 SP B Schema armatura a taglio

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   						
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 67 di 354

## 12 VERIFICHE ALLO SLU DI TIPO GEOTECNICO SPALLA B

### 12.1 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. 2).

Di seguito si riporta, per i pali di fondazione di lunghezza  $L = 18$  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]	5761,6 (SLV)
Massima trazione, $N_{dt}$ , max [kN]	-2566,4 (SLV)

Tabella 36: 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]	3729,9 (SLE)
--	--------------

Tabella 37: Combinazione SLE: Sollecitazione massima di compressione

In Tabella 26 si riporta, per i pali di lunghezza 18.0 m, la capacità portante a compressione ( $R_{c,d}$ ) e a trazione ( $R_{t,d}$ ) del palo isolato secondo l'Approccio 2 (A1+M1+R3).







Combinazione SLU A1+M1+R3 (metodo AGI)							Comb. SLU A1+M1+R3 (metodo AGI)				
L_palo	Q <sub>l-c,k</sub>	Q <sub>b-c,k</sub>	Q <sub>l-c,d</sub>	Q <sub>b-c,d</sub>	$\Delta W$ palo	Q <sub>c,d</sub>	L_palo	Q <sub>l-t,k</sub>	Q <sub>l-t,d</sub>	$\Delta W$ palo	Q <sub>t,d</sub>
m	kN	kN	kN	kN	kN	kN	m	kN	kN	kN	kN
18,0	6563,3	5560,2	3804,80	2745,78	620,27	5930	18,0	6563,3	3500,41	477,13	3978

Tabella 38: Capacità portante a compressione e a trazione dei pali di fondazione secondo l'Approccio 2 (A1+M1+R3).

#### 12.1.1 Capacità portante verticale del palo singolo

Stratigrafia e parametri geotecnici







Dati di input		
Diametro Palo	1.5	m
Sovraccarico efficace	27.9	kPa
HW da testa palo	1.0	m
$\gamma$ acqua	10	kN/m <sup>3</sup>
$\Delta z$ palo da p.c. originario	4.5	m
N° diametri per qb	4	(-)
L palo fuori terra	0	(m)
Peso calcestruzzo	25	kN/m <sup>3</sup>
Pressione max sul cls.	11.34	MPa

<b>APPALTATORE:</b> Consorzio <span style="margin-left: 100px;">Soci</span>   		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <span style="margin-left: 100px;">Mandanti</span>   							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>		COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 68 di 354







Caratteristiche del terreno													
Profondità (m)		Strato	Terreno	$\gamma_{tot}$	Nspt		$c_u$ (kPa)		$\Delta-z$	$\phi^\circ$		Nq	
da	a	No.	(S,SL,G,A)	kN/m3	da	a	da	a	(m)	da	a	da	a
0,0	2,50	1	S	19,0					1,00	38	38	25,7	25,7
2,5	5,00	2	S	19,0					1,00	29	29	8,3	8,3
5,0	12,30	3	A	20,5			120	120	1,00				
12,3	17,00	4	S	20,5					1,00	33	33	11,95	11,95
17,0	27,00	5	A	20,5			220	220	1,00				
27,0	35,50	6	S	20,5					1,00	33	33	11,95	11,95
35,5	50,0	7	A	20,5			300	300	1,00				

Verticali di indagine	$\xi_3$	$\xi_4$
5	1.50	1.34

Scelta di $\xi$	$\xi$
3	1.5

<b>APPALTATORE:</b> Consorzio <span style="margin-left: 100px;">Soci</span>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <span style="margin-left: 100px;">Mandanti</span>   	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	COMMESSA <span style="margin-left: 50px;">LOTTO</span> <span style="margin-left: 50px;">CODIFICA</span> <span style="margin-left: 50px;">DOCUMENTO</span> <span style="margin-left: 50px;">REV.</span> <span style="margin-left: 50px;">FOGLIO</span> IF28 <span style="margin-left: 50px;">01</span> <span style="margin-left: 50px;">E ZZ CL</span> <span style="margin-left: 50px;">VI0403 001</span> <span style="margin-left: 50px;">B</span> <span style="margin-left: 50px;">69 di 354</span>

Combinazione SLE (metodo AGI)						
L palo	$\tau_s$ calcolo	$q_{ub}$ calcolo	$R_{c,s,k}$	$R_{c,b,k}$	$\Delta W$ palo	$Q_{c,s,k}/1.25$
m	kPa	kPa	kN	kN	kN	kN
1,0	47,7	286,9	224,8	506,9	26,5	153,3
2,0	54,3	573,7	480,5	1013,9	53,0	331,4
2,5	57,4	717,2	615,8	1267,3	66,3	426,3
2,5	58,5	717,2	615,8	1267,3	66,3	426,3
3,0	42,2	860,6	715,3	1520,8	79,5	492,7
4,0	44,5	1147,5	924,9	2027,8	106,0	633,9
5,0	47,5	1222,2	1148,6	2159,8	132,5	786,4
5,0	49,0	1222,2	1148,6	2159,8	132,5	786,4
6,0	82,2	1497,6	1535,8	2646,4	159,0	1069,6
7,0	82,2	1773,0	1923,0	3133,1	185,6	1352,8
8,0	82,2	2048,4	2310,1	3619,8	212,1	1636,0
9,0	82,2	2323,8	2697,3	4106,5	238,6	1919,3
10,0	82,2	2323,8	3084,5	4106,5	265,1	2202,5
11,0	82,2	2323,8	3471,6	4106,5	291,6	2485,7
12,0	82,2	2323,8	3858,8	4106,5	318,1	2768,9
12,3	82,2	2323,8	3974,9	4106,5	326,0	2853,9
12,3	82,2	2323,8	3974,9	4106,5	326,0	2853,9
13,0	85,3	2464,0	4256,4	4354,3	344,6	3060,5
14,0	88,7	2664,3	4674,2	4708,3	371,1	3368,3
15,0	92,6	2864,7	5110,6	5062,3	397,6	3690,9
16,0	96,5	3017,7	5565,6	5332,7	424,1	4028,3
17,0	100,5	3082,0	6039,1	5446,4	450,6	4380,6
17,0	102,4	3082,0	6039,1	5446,4	450,6	4380,6
18,0	111,2	3146,4	6563,3	5560,2	477,1	4773,5
19,0	111,2	3146,4	7087,5	5560,2	503,6	5166,4
20,0	111,2	3146,4	7611,7	5560,2	530,1	5559,2
21,0	111,2	3146,4	8135,9	5560,2	556,7	5952,1
22,0	111,2	3146,4	8660,2	5560,2	583,2	6345,0
23,0	111,2	3146,4	9184,4	5560,2	609,7	6737,8
24,0	111,2	3146,4	9708,6	5560,2	636,2	7130,7
25,0	111,2	3146,4	10232,8	5560,2	662,7	7523,6
26,0	111,2	3146,4	10757,0	5560,2	689,2	7916,4
27,0	111,2	3146,4	11281,3	5560,2	715,7	8309,3
27,0	111,2	3146,4	11281,3	5560,2	715,7	8309,3
28,0	143,8	3434,8	11958,8	6069,8	742,2	8824,9
29,0	147,7	3723,2	12654,9	6579,5	768,7	9355,2
30,0	151,7	4011,6	13369,6	7089,1	795,2	9900,5
31,0	155,6	4300,0	14102,8	7598,7	821,7	10460,5
32,0	159,5	4300,0	14854,6	7598,7	848,2	11035,4
33,0	163,5	4143,6	15624,9	7322,3	874,7	11625,2
34,0	167,4	3987,1	16413,7	7045,8	901,2	12229,7
35,0	171,3	3830,7	17221,2	6769,4	927,8	12849,2
35,5	174,3	3752,5	17631,8	6631,1	941,0	13164,5
35,5	175,3	3752,5	17631,8	6631,1	941,0	13164,5
36,0	129,9	3674,2	17937,9	6492,9	954,3	13396,1
37,0	129,9	3674,2	18550,1	6492,9	980,8	13859,3
38,0	129,9	3674,2	19162,2	6492,9	1007,3	14322,5
39,0	129,9	3674,2	19774,4	6492,9	1033,8	14785,7
40,0	129,9	3674,2	20386,5	6492,9	1060,3	15248,9

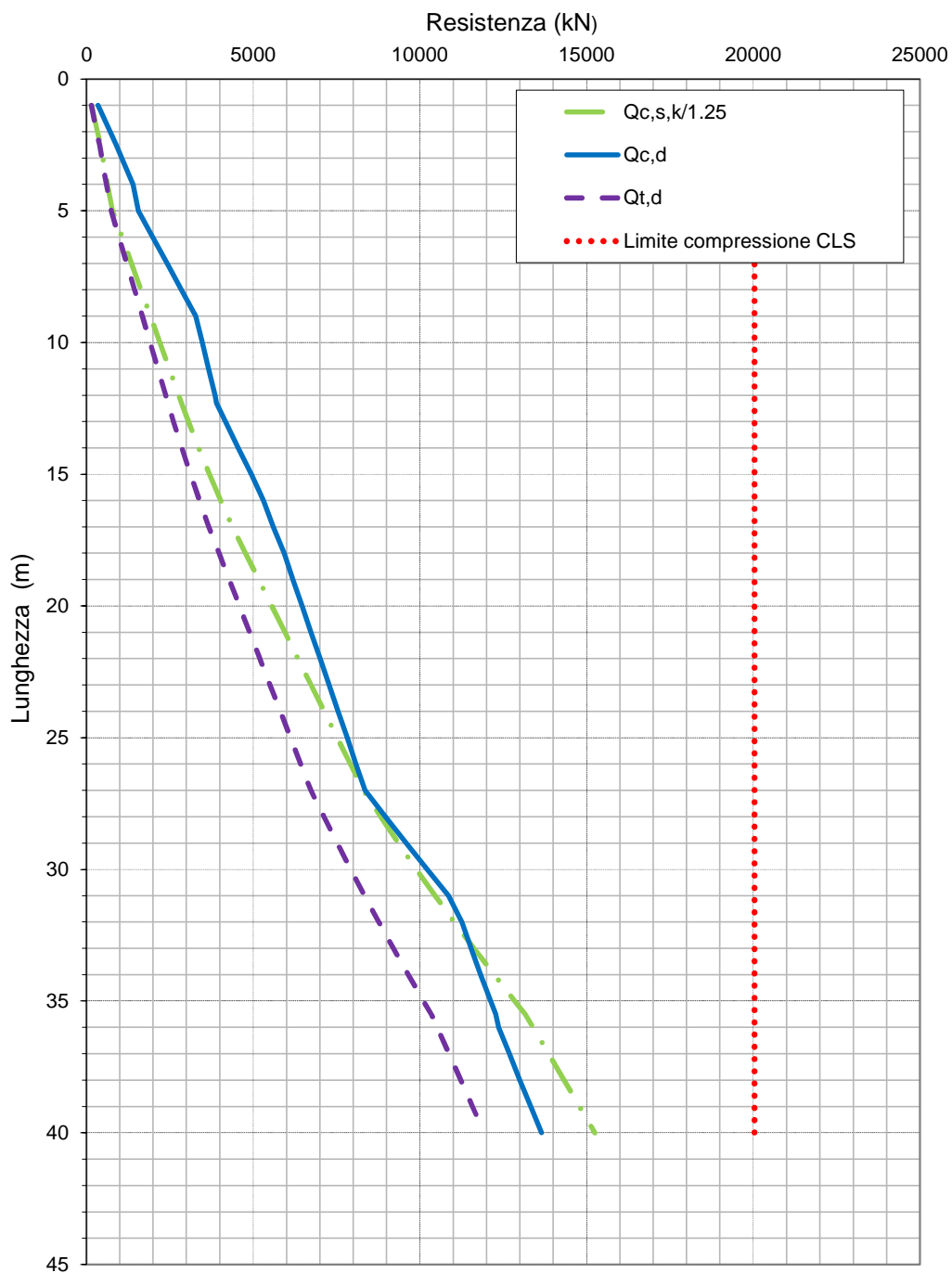
<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	

Combinazione SLU A1+M1+R3 (metodo AGI)						
L palo	Q l-c,k	Q b-c,k	Q l-c,d	Q b-c,d	ΔW palo	Qc,d
m	kN	kN	kN	kN	kN	kN
1,0	224,8	506,9	130,30	250,34	34,46	346
2,0	480,5	1013,9	278,53	500,68	68,92	710
2,5	615,8	1267,3	356,97	625,85	86,15	897
2,5	615,8	1267,3	356,97	625,85	86,15	897
3,0	715,3	1520,8	414,66	751,02	103,38	1062
4,0	924,9	2027,8	536,18	1001,36	137,84	1400
5,0	1148,6	2159,8	665,88	1066,55	172,30	1560
5,0	1148,6	2159,8	665,88	1066,55	172,30	1560
6,0	1535,8	2646,4	890,32	1306,88	206,76	1990
7,0	1923,0	3133,1	1114,76	1547,22	241,22	2421
8,0	2310,1	3619,8	1339,20	1787,55	275,67	2851
9,0	2697,3	4106,5	1563,65	2027,89	310,13	3281
10,0	3084,5	4106,5	1788,09	2027,89	344,59	3471
11,0	3471,6	4106,5	2012,53	2027,89	379,05	3661
12,0	3858,8	4106,5	2236,97	2027,89	413,51	3851
12,3	3974,9	4106,5	2304,30	2027,89	423,85	3908
12,3	3974,9	4106,5	2304,30	2027,89	423,85	3908
13,0	4256,4	4354,3	2467,46	2150,26	447,97	4170
14,0	4674,2	4708,3	2709,69	2325,08	482,43	4552
15,0	5110,6	5062,3	2962,67	2499,90	516,89	4946
16,0	5565,6	5332,7	3226,41	2633,41	551,35	5308
17,0	6039,1	5446,4	3500,90	2689,59	585,81	5605
17,0	6039,1	5446,4	3500,90	2689,59	585,81	5605
18,0	6563,3	5560,2	3804,80	2745,78	620,27	5930
19,0	7087,5	5560,2	4108,69	2745,78	654,73	6200
20,0	7611,7	5560,2	4412,59	2745,78	689,19	6469
21,0	8135,9	5560,2	4716,48	2745,78	723,65	6739
22,0	8660,2	5560,2	5020,38	2745,78	758,11	7008
23,0	9184,4	5560,2	5324,28	2745,78	792,56	7277
24,0	9708,6	5560,2	5628,17	2745,78	827,02	7547
25,0	10232,8	5560,2	5932,07	2745,78	861,48	7816
26,0	10757,0	5560,2	6235,96	2745,78	895,94	8086
27,0	11281,3	5560,2	6539,86	2745,78	930,40	8355
27,0	11281,3	5560,2	6539,86	2745,78	930,40	8355
28,0	11958,8	6069,8	6932,65	2997,45	964,86	8965
29,0	12654,9	6579,5	7336,19	3249,12	999,32	9586
30,0	13369,6	7089,1	7750,48	3500,79	1033,78	10217
31,0	14102,8	7598,7	8175,54	3752,46	1068,24	10860
32,0	14854,6	7598,7	8611,34	3752,46	1102,70	11261
33,0	15624,9	7322,3	9057,90	3615,94	1137,16	11537
34,0	16413,7	7045,8	9515,21	3479,42	1171,62	11823
35,0	17221,2	6769,4	9983,28	3342,90	1206,08	12120
35,5	17631,8	6631,1	10221,35	3274,63	1223,31	12273
35,5	17631,8	6631,1	10221,35	3274,63	1223,31	12273
36,0	17937,9	6492,9	10398,78	3206,37	1240,54	12365
37,0	18550,1	6492,9	10753,66	3206,37	1275,00	12685
38,0	19162,2	6492,9	11108,53	3206,37	1309,46	13005
39,0	19774,4	6492,9	11463,41	3206,37	1343,91	13326
40,0	20386,5	6492,9	11818,28	3206,37	1378,37	13646


Comb. SLU A1+M1+R3 (metodo AGI)				
L palo	Q l-t,k	Q l-t,d	ΔW palo	Qt,d
m	kN	kN	kN	kN
1,0	224,8	119,88	26,51	146
2,0	480,5	256,25	53,01	309
2,5	615,8	328,41	66,27	395
2,5	615,8	328,41	66,27	395
3,0	715,3	381,49	79,52	461
4,0	924,9	493,29	106,03	599
5,0	1148,6	612,61	132,54	745
5,0	1148,6	612,61	132,54	745
6,0	1535,8	819,09	159,04	978
7,0	1923,0	1025,58	185,55	1211
8,0	2310,1	1232,07	212,06	1444
9,0	2697,3	1438,55	238,56	1677
10,0	3084,5	1645,04	265,07	1910
11,0	3471,6	1851,53	291,58	2143
12,0	3858,8	2058,01	318,09	2376
12,3	3974,9	2119,96	326,04	2446
12,3	3974,9	2119,96	326,04	2446
13,0	4256,4	2270,07	344,59	2615
14,0	4674,2	2492,92	371,10	2864
15,0	5110,6	2725,66	397,61	3123
16,0	5565,6	2968,30	424,12	3392
17,0	6039,1	3220,83	450,62	3671
17,0	6039,1	3220,83	450,62	3671
18,0	6563,3	3500,41	477,13	3978
19,0	7087,5	3780,00	503,64	4284
20,0	7611,7	4059,58	530,14	4590
21,0	8135,9	4339,17	556,65	4896
22,0	8660,2	4618,75	583,16	5202
23,0	9184,4	4898,33	609,67	5508
24,0	9708,6	5177,92	636,17	5814
25,0	10232,8	5457,50	662,68	6120
26,0	10757,0	5737,09	689,19	6426
27,0	11281,3	6016,67	715,69	6732
27,0	11281,3	6016,67	715,69	6732
28,0	11958,8	6378,03	742,20	7120
29,0	12654,9	6749,29	768,71	7518
30,0	13369,6	7130,45	795,22	7926
31,0	14102,8	7521,49	821,72	8343
32,0	14854,6	7922,43	848,23	8771
33,0	15624,9	8333,27	874,74	9208
34,0	16413,7	8754,00	901,24	9655
35,0	17221,2	9184,62	927,75	10112
35,5	17631,8	9403,64	941,01	10345
35,5	17631,8	9403,64	941,01	10345
36,0	17937,9	9566,88	954,26	10521
37,0	18550,1	9893,37	980,77	10874
38,0	19162,2	10219,85	1007,27	11227
39,0	19774,4	10546,33	1033,78	11580
40,0	20386,5	10872,82	1060,29	11933

<b>APPALTATORE:</b> Consorzio <b>HirpiniaAV</b> Soci <b>salini impregilo</b> <b>ASTALDI</b>	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <b>ROKSOJL</b> Mandanti <b>NETENGINEERING</b> <b>Alpina</b>	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	COMMESSA <b>IF28</b> LOTTO <b>01</b> CODIFICA <b>E ZZ CL</b> DOCUMENTO <b>VI0403 001</b> REV. <b>B</b> FOGLIO <b>71 di 354</b>

**VI04 - Spalla B**  
**Capacità portante A1+M1+R3 - compressione**  
**Diaframma 1.2m x 2.5m**



**Figura 12-1: Capacità portante del palo singolo**

<b>APPALTATORE:</b> Consorzio <span style="margin-left: 100px;">Soci</span> 	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <span style="margin-left: 100px;">Mandanti</span> 						
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 72 di 354

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

La verifica di capacità portante orizzontale del gruppo di pali è stata condotta con i criteri descritti nel documento di cui al Ref. 2) §6.2, con i metodi basati sulle curve p-y.

Considerata la presenza di successioni stratigrafiche abbastanza articolate, con contrasti di rigidezza anche marcati e caratteristiche diverse delle varie unità geotecniche, si è fatto uso del programma FEM non lineare LPile, considerando negli strati di terreno curve p-y non lineari, definibili lungo il fuso del palo, e opportunamente ridotte secondo il coefficiente parziale  $\xi \times \gamma_T$ .

Si ricava una curva “pushover” del palo singolo: incrementando progressivamente il carico orizzontale applicato alla testa del palo, fino al raggiungimento del collasso, vale a dire della completa plasticizzazione del terreno. Tale plasticizzazione si rende “visibile” attraverso il cambiamento del comportamento deformativo del palo stesso, al raggiungimento del “plateau” di resistenza.

Nella seguente Figura 9-2 è illustrata la curva push-over ottenuta per il palo in oggetto, con il vincolo di invastro, al crescere dell'azione H applicata alla testa dello stesso.

Il taglio massimo agente è pari a  $T_{longSLV} \approx 2319,4$  kN.

La verifica a capacità portante orizzontale risulta soddisfatta, poiché il carico limite  $H_{lim} = 2491.0$  kN risulta superiore al valore di progetto.

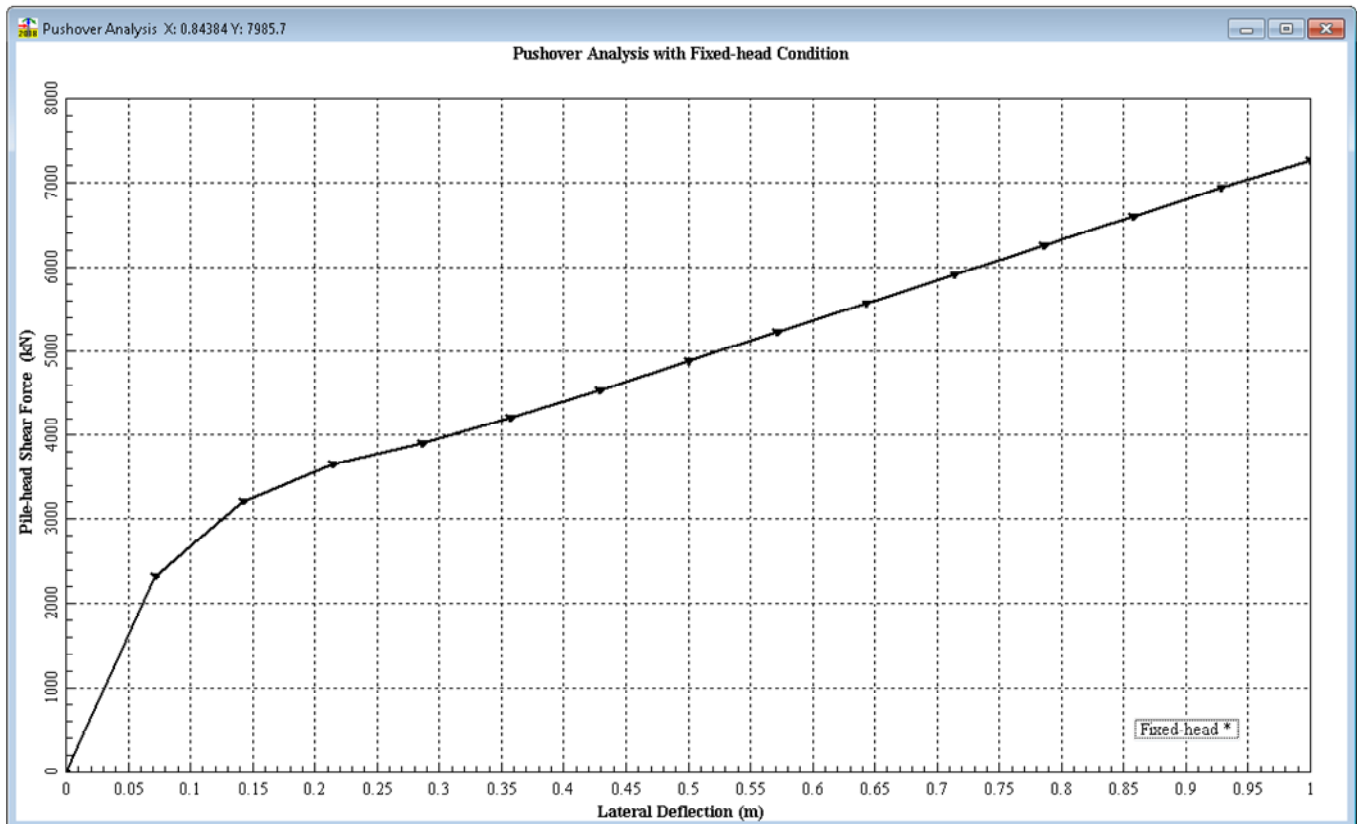


Figura 12-2: Analisi push-over palo



APPALTATORE: <u>Consorzio</u> <u>Soci</u> HIRPINIA AV                      SALINI IMPREGILO S.P.A.    ASTALDI S.P.A.	<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: <u>Mandatario</u> <u>Mandanti</u> ROCKSOIL S.P.A.                      NET ENGINEERING S.P.A.    ALPINA S.P.A.	<b>RADDOPPIO TRATTA APICE – ORSARA I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 73 di 354

## 13 ALLEGATO: TABULATI GROUP

### 13.1 SPALLA A 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: July 03, 2020      Time: 09:45:00

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

New Group

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

LOAD CASE :      1  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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	0.6075	1.0000
2	0.5969	1.0000
3	0.8661	1.0000
4	0.5016	1.0000
5	0.4952	1.0000
6	0.7922	1.0000
7	0.4980	1.0000
8	0.4920	1.0000
9	0.7905	1.0000
10	0.4989	1.0000
11	0.4930	1.0000
12	0.7905	1.0000
13	0.5845	1.0000
14	0.5739	1.0000
15	0.8501	1.0000

\* TABLE L \*      COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
33146.2	-1994.35	493.797
MOMENT X , KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-156.409	4115.61	-2859.71

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>							

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL , M 1.26627E-03	HORIZONTAL Y, M -4.58992E-04	HORIZONTAL Z, M 1.22993E-04
ANGLE ROT. X,RAD -2.81002E-07	ANGLE ROT. Y,RAD 5.26457E-06	ANGLE ROT. Z,RAD 9.09341E-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	1.2727E-03	-4.5646E-04	1.2173E-04	-2.8100E-07	5.2646E-06	9.0934E-06
2	1.3136E-03	-4.5646E-04	1.2299E-04	-2.8100E-07	5.2646E-06	9.0934E-06
3	1.3546E-03	-4.5646E-04	1.2426E-04	-2.8100E-07	5.2646E-06	9.0934E-06
4	1.2490E-03	-4.5773E-04	1.2173E-04	-2.8100E-07	5.2646E-06	9.0934E-06
5	1.2900E-03	-4.5773E-04	1.2299E-04	-2.8100E-07	5.2646E-06	9.0934E-06
6	1.3309E-03	-4.5773E-04	1.2426E-04	-2.8100E-07	5.2646E-06	9.0934E-06
7	1.2254E-03	-4.5899E-04	1.2173E-04	-2.8100E-07	5.2646E-06	9.0934E-06
8	1.2663E-03	-4.5899E-04	1.2299E-04	-2.8100E-07	5.2646E-06	9.0934E-06
9	1.3072E-03	-4.5899E-04	1.2426E-04	-2.8100E-07	5.2646E-06	9.0934E-06
10	1.2017E-03	-4.6026E-04	1.2173E-04	-2.8100E-07	5.2646E-06	9.0934E-06
11	1.2426E-03	-4.6026E-04	1.2299E-04	-2.8100E-07	5.2646E-06	9.0934E-06
12	1.2835E-03	-4.6026E-04	1.2426E-04	-2.8100E-07	5.2646E-06	9.0934E-06
13	1.1780E-03	-4.6152E-04	1.2173E-04	-2.8100E-07	5.2646E-06	9.0934E-06
14	1.2189E-03	-4.6152E-04	1.2299E-04	-2.8100E-07	5.2646E-06	9.0934E-06
15	1.2598E-03	-4.6152E-04	1.2426E-04	-2.8100E-07	5.2646E-06	9.0934E-06
MINIMUM	1.1780E-03	-4.6152E-04	1.2173E-04	-2.8100E-07	5.2646E-06	9.0934E-06
Pile N.	13	13	1	1	1	1
MAXIMUM	1.3546E-03	-4.5646E-04	1.2426E-04	-2.8100E-07	5.2646E-06	9.0934E-06
Pile N.	3	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
1	2221.0	-131.18	32.251	-0.093657	-94.373	-399.88
2	2292.1	-130.22	32.393	-0.093657	-95.082	-397.88
3	2363.2	-151.71	38.348	-0.093657	-107.51	-441.41
4	2179.8	-121.47	29.704	-0.093657	-89.006	-379.66
5	2250.9	-120.81	29.895	-0.093657	-89.803	-378.25
6	2322.0	-146.70	36.937	-0.093657	-104.73	-431.96
7	2138.7	-121.45	29.610	-0.093657	-88.801	-380.00
8	2209.7	-120.83	29.809	-0.093657	-89.617	-378.66
9	2280.8	-146.99	36.901	-0.093657	-104.66	-432.98
10	2097.5	-121.89	29.632	-0.093657	-88.847	-381.33
11	2168.6	-121.27	29.832	-0.093657	-89.664	-380.00
12	2239.7	-147.41	36.897	-0.093657	-104.65	-434.25
13	2056.3	-130.57	31.712	-0.093657	-93.245	-400.20
14	2127.4	-129.58	31.841	-0.093657	-93.923	-398.11
15	2198.5	-152.27	38.035	-0.093657	-106.89	-444.32
MINIMUM	2056.3	-152.27	29.610	-0.093657	-107.51	-444.32
Pile N.	13	15	7	1	3	15
MAXIMUM	2363.2	-120.81	38.348	-0.093657	-88.801	-378.25
Pile N.	3	5	3	1	7	5

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
1	1.2727E-03	-4.5646E-04	1.2173E-04	-2.8100E-07	5.2646E-06	9.0934E-06
2	1.3136E-03	-4.5646E-04	1.2299E-04	-2.8100E-07	5.2646E-06	9.0934E-06
3	1.3546E-03	-4.5646E-04	1.2426E-04	-2.8100E-07	5.2646E-06	9.0934E-06
4	1.2490E-03	-4.5773E-04	1.2173E-04	-2.8100E-07	5.2646E-06	9.0934E-06
5	1.2900E-03	-4.5773E-04	1.2299E-04	-2.8100E-07	5.2646E-06	9.0934E-06
6	1.3309E-03	-4.5773E-04	1.2426E-04	-2.8100E-07	5.2646E-06	9.0934E-06
7	1.2254E-03	-4.5899E-04	1.2173E-04	-2.8100E-07	5.2646E-06	9.0934E-06
8	1.2663E-03	-4.5899E-04	1.2299E-04	-2.8100E-07	5.2646E-06	9.0934E-06
9	1.3072E-03	-4.5899E-04	1.2426E-04	-2.8100E-07	5.2646E-06	9.0934E-06
10	1.2017E-03	-4.6026E-04	1.2173E-04	-2.8100E-07	5.2646E-06	9.0934E-06
11	1.2426E-03	-4.6026E-04	1.2299E-04	-2.8100E-07	5.2646E-06	9.0934E-06
12	1.2835E-03	-4.6026E-04	1.2426E-04	-2.8100E-07	5.2646E-06	9.0934E-06
13	1.1780E-03	-4.6152E-04	1.2173E-04	-2.8100E-07	5.2646E-06	9.0934E-06
14	1.2189E-03	-4.6152E-04	1.2299E-04	-2.8100E-07	5.2646E-06	9.0934E-06
15	1.2598E-03	-4.6152E-04	1.2426E-04	-2.8100E-07	5.2646E-06	9.0934E-06
MINIMUM	1.1780E-03	-4.6152E-04	1.2173E-04	-2.8100E-07	5.2646E-06	9.0934E-06

APPALTATORE:

Consorzio

Soci



ITINERARIO NAPOLI – BARI

PROGETTAZIONE:

Mandataria

Mandanti



RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

PROGETTO ESECUTIVO

RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO
IF28	01	E ZZ CL	VI0403 001	B	75 di 354

Pile N.	13	13	1	1	1	1
MAXIMUM	1.3546E-03	-4.5646E-04	1.2426E-04	-2.8100E-07	5.2646E-06	9.0934E-06
Pile N.	3	1	3	1	1	1

\* PILE TOP REACTIONS \*


PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	2221.0	-131.18	32.251	-0.093657	-94.373	-399.88
2	2292.1	-130.22	32.393	-0.093657	-95.082	-397.88
3	2363.2	-151.71	38.348	-0.093657	-107.51	-441.41
4	2179.8	-121.47	29.704	-0.093657	-89.006	-379.66
5	2250.9	-120.81	29.895	-0.093657	-89.803	-378.25
6	2322.0	-146.70	36.937	-0.093657	-104.73	-431.96
7	2138.7	-121.45	29.610	-0.093657	-88.801	-380.00
8	2209.7	-120.83	29.809	-0.093657	-89.617	-378.66
9	2280.8	-146.99	36.901	-0.093657	-104.66	-432.98
10	2097.5	-121.89	29.632	-0.093657	-88.847	-381.33
11	2168.6	-121.27	29.832	-0.093657	-89.664	-380.00
12	2239.7	-147.41	36.897	-0.093657	-104.65	-434.25
13	2056.3	-130.57	31.712	-0.093657	-93.245	-400.20
14	2127.4	-129.58	31.841	-0.093657	-93.923	-398.11
15	2198.5	-152.27	38.035	-0.093657	-106.89	-444.32
MINIMUM	2056.3	-152.27	29.610	-0.093657	-107.51	-444.32
Pile N.	13	15	7	1	3	15
MAXIMUM	2363.2	-120.81	38.348	-0.093657	-88.801	-378.25
Pile N.	3	5	3	1	7	5

PILE GROUP	STRESS, KN/ M**2
1	2496.8
2	2531.7
3	2708.4
4	2410.4
5	2447.1
6	2655.4
7	2388.0
8	2424.9
9	2635.1
10	2368.6
11	2405.5
12	2615.5
13	2403.8
14	2438.4
15	2623.4
MINIMUM	2368.6
Pile N.	10
MAXIMUM	2708.4
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	-4.5646E-04	-3.7442E-06	-166.82	-94.373	-131.19	-10.900	-90.205	-3.0057	1256.8	7.8279E+06	7.8279E+06
x(M)	0.0000	9.5400	5.5800	0.0000	0.0000	7.5600	4.1400	9.0000	18.000	0.0000	0.0000
2	-4.5646E-04	-3.7932E-06	-165.75	-95.082	-130.23	-10.897	-89.027	-2.9737	1297.0	7.8279E+06	7.8279E+06
x(M)	0.0000	9.7200	5.5800	0.0000	0.0000	7.5600	4.1400	9.0000	18.000	0.0000	0.0000
3	-4.5646E-04	-3.5953E-06	-189.40	-107.51	-151.72	-13.784	-116.29	-4.4001	1337.3	7.8279E+06	7.8279E+06
x(M)	0.0000	9.0000	5.4000	0.0000	0.0000	7.2000	4.1400	9.0000	18.000	0.0000	0.0000
4	-4.5773E-04	-3.8573E-06	-155.82	-89.006	-121.48	-9.6842	-78.469	-2.3361	1233.5	7.8279E+06	7.8279E+06
x(M)	0.0000	9.9000	5.7600	0.0000	0.0000	7.7400	4.1400	9.0000	18.000	0.0000	0.0000
5	-4.5773E-04	-3.9059E-06	-155.09	-89.803	-120.82	-9.7083	-77.702	-2.3164	1273.8	7.8279E+06	7.8279E+06
x(M)	0.0000	9.9000	5.7600	0.0000	0.0000	7.9200	4.1400	9.0000	18.000	0.0000	0.0000
6	-4.5773E-04	-3.6580E-06	-184.11	-104.73	-146.71	-13.065	-109.34	-4.0636	1314.0	7.8279E+06	7.8279E+06
x(M)	0.0000	9.1800	5.4000	0.0000	0.0000	7.3800	4.1400	9.0000	18.000	0.0000	0.0000
7	-4.5899E-04	-3.8608E-06	-155.84	-88.801	-121.46	-9.6388	-78.179	-2.3115	1210.2	7.8279E+06	7.8279E+06
x(M)	0.0000	9.9000	5.7600	0.0000	0.0000	7.7400	4.1400	9.0000	18.000	0.0000	0.0000
8	-4.5899E-04	-3.9088E-06	-155.15	-89.617	-120.84	-9.6710	-77.456	-2.2942	1250.5	7.8279E+06	7.8279E+06
x(M)	0.0000	9.9000	5.7600	0.0000	0.0000	7.9200	4.1400	9.0000	18.000	0.0000	0.0000
9	-4.5899E-04	-3.6589E-06	-184.48	-104.66	-147.00	-13.048	-109.35	-4.0553	1290.7	7.8279E+06	7.8279E+06
x(M)	0.0000	9.1800	5.4000	0.0000	0.0000	7.3800	4.1400	9.0000	18.000	0.0000	0.0000
10	-4.6026E-04	-3.8595E-06	-156.38	-88.847	-121.90	-9.6501	-78.417	-2.3176	1186.9	7.8279E+06	7.8279E+06
x(M)	0.0000	9.9000	5.7600	0.0000	0.0000	7.7400	4.1400	9.0000	18.000	0.0000	0.0000
11	-4.6026E-04	-3.9075E-06	-155.69	-89.664	-121.28	-9.6817	-77.695	-2.3005	1227.2	7.8279E+06	7.8279E+06
x(M)	0.0000	9.9000	5.7600	0.0000	0.0000	7.9200	4.1400	9.0000	18.000	0.0000	0.0000
12	-4.6026E-04	-3.6586E-06	-184.98	-104.65	-147.42	-13.047	-109.53	-4.0549	1267.4	7.8279E+06	7.8279E+06
x(M)	0.0000	9.1800	5.4000	0.0000	0.0000	7.3800	4.1400	9.0000	18.000	0.0000	0.0000
13	-4.6152E-04	-3.7664E-06	-166.28	-93.245	-130.58	-10.634	-88.266	-2.8662	1163.6	7.8279E+06	7.8279E+06
x(M)	0.0000	9.7200	5.5800	0.0000	0.0000	7.5600	4.1400	9.0000	18.000	0.0000	0.0000
14	-4.6152E-04	-3.8197E-06	-165.15	-93.923	-129.59	-10.631	-87.060	-2.8305	1203.9	7.8279E+06	7.8279E+06
x(M)	0.0000	9.7200	5.5800	0.0000	0.0000	7.7400	4.1400	9.0000	18.000	0.0000	0.0000

APPALTATORE: Consorzio <b>Soci</b>   		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>			
PROGETTAZIONE: Mandataria <b>Mandanti</b>   					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B					
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO
IF28	01	E ZZ CL	VI0403 001	B	76 di 354

15	-4.6152E-04	-3.6065E-06	-190.28	-106.89	-152.29	-13.624	-115.52	-4.3287	1244.1	7.8279E+06	7.8279E+06
x( M)	0.0000	9.1800	5.4000	0.0000	0.0000	7.2000	4.1400	9.0000	18.000	0.0000	0.0000
Min. Pile N.	-4.6152E-04	-3.9088E-06	-190.28	-107.51	-152.29	-13.784	-116.29	-4.4001	1163.6	7.8279E+06	7.8279E+06
	13	8	15	3	15	3	3	3	13	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2	KN- M**2	KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	1.4371E-05	1.2173E-04	399.88	43.510	41.752	32.253	11.340	22.804	2496.8	7.8279E+06	7.8279E+06
x( M)	9.7200	0.0000	0.0000	5.5800	7.7400	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
2	1.4416E-05	1.2299E-04	397.88	43.710	41.324	32.395	11.091	22.763	2531.7	7.8279E+06	7.8279E+06
x( M)	9.7200	0.0000	0.0000	5.5800	7.7400	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
3	1.3528E-05	1.2426E-04	441.41	50.441	51.724	38.351	16.516	30.106	2708.4	7.8279E+06	7.8279E+06
x( M)	9.1800	0.0000	0.0000	5.2200	7.2000	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
4	1.4818E-05	1.2173E-04	379.66	40.570	37.227	29.707	8.7067	19.767	2410.4	7.8279E+06	7.8279E+06
x( M)	9.9000	0.0000	0.0000	5.5800	7.9200	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
5	1.4845E-05	1.2299E-04	378.25	40.807	36.938	29.897	8.5356	19.797	2447.1	7.8279E+06	7.8279E+06
x( M)	10.080	0.0000	0.0000	5.5800	7.9200	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
6	1.3779E-05	1.2426E-04	431.96	48.891	49.233	36.940	15.249	28.217	2655.4	7.8279E+06	7.8279E+06
x( M)	9.1800	0.0000	0.0000	5.4000	7.3800	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
7	1.4870E-05	1.2173E-04	380.00	40.457	37.166	29.612	8.6324	19.636	2388.0	7.8279E+06	7.8279E+06
x( M)	10.080	0.0000	0.0000	5.5800	7.9200	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
8	1.4902E-05	1.2299E-04	378.66	40.704	36.893	29.812	8.4711	19.677	2424.9	7.8279E+06	7.8279E+06
x( M)	10.080	0.0000	0.0000	5.5800	7.9200	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
9	1.3821E-05	1.2426E-04	432.98	48.853	49.307	36.904	15.260	28.140	2635.1	7.8279E+06	7.8279E+06
x( M)	9.1800	0.0000	0.0000	5.4000	7.3800	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
10	1.4907E-05	1.2173E-04	381.33	40.485	37.313	29.634	8.6804	19.640	2368.6	7.8279E+06	7.8279E+06
x( M)	9.9000	0.0000	0.0000	5.5800	7.9200	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
11	1.4938E-05	1.2299E-04	380.00	40.733	37.040	29.834	8.5191	19.681	2405.5	7.8279E+06	7.8279E+06
x( M)	10.080	0.0000	0.0000	5.5800	7.9200	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
12	1.3858E-05	1.2426E-04	434.25	48.850	49.441	36.900	15.301	28.104	2615.5	7.8279E+06	7.8279E+06
x( M)	9.1800	0.0000	0.0000	5.4000	7.3800	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
13	1.4622E-05	1.2173E-04	400.20	42.913	41.257	31.714	10.906	22.056	2403.8	7.8279E+06	7.8279E+06
x( M)	9.7200	0.0000	0.0000	5.5800	7.7400	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
14	1.4660E-05	1.2299E-04	398.11	43.093	40.801	31.843	10.645	22.002	2438.4	7.8279E+06	7.8279E+06
x( M)	9.7200	0.0000	0.0000	5.5800	7.7400	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
15	1.3729E-05	1.2426E-04	444.32	50.085	51.722	38.038	16.422	29.564	2623.4	7.8279E+06	7.8279E+06
x( M)	9.1800	0.0000	0.0000	5.2200	7.3800	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
Max. Pile N.	1.4938E-05	1.2426E-04	444.32	50.441	51.724	38.351	16.516	30.106	2708.4	7.8279E+06	7.8279E+06
	11	3	15	3	3	3	3	3	3	1	1

LOAD CASE : 2  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp



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	0.5885	1.0000
2	0.5821	1.0000
3	0.8661	1.0000
4	0.4966	1.0000
5	0.4951	1.0000
6	0.8031	1.0000
7	0.4951	1.0000
8	0.4937	1.0000
9	0.8028	1.0000
10	0.4961	1.0000
11	0.4947	1.0000
12	0.8028	1.0000
13	0.5845	1.0000
14	0.5782	1.0000
15	0.8634	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
32526.2	-4433.76	493.797
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-183.189	4115.61	8688.37

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>							

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL , M 1.24248E-03	HORIZONTAL Y, M -1.24838E-03	HORIZONTAL Z, M 1.33935E-04
ANGLE ROT. X,RAD -2.57717E-07	ANGLE ROT. Y,RAD 5.30102E-06	ANGLE ROT. Z,RAD 6.16861E-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	1.0126E-03	-1.2461E-03	1.3277E-04	-2.5772E-07	5.3010E-06	6.1686E-05
2	1.2902E-03	-1.2461E-03	1.3394E-04	-2.5772E-07	5.3010E-06	6.1686E-05
3	1.5678E-03	-1.2461E-03	1.3510E-04	-2.5772E-07	5.3010E-06	6.1686E-05
4	9.8875E-04	-1.2472E-03	1.3277E-04	-2.5772E-07	5.3010E-06	6.1686E-05
5	1.2663E-03	-1.2472E-03	1.3394E-04	-2.5772E-07	5.3010E-06	6.1686E-05
6	1.5439E-03	-1.2472E-03	1.3510E-04	-2.5772E-07	5.3010E-06	6.1686E-05
7	9.6489E-04	-1.2484E-03	1.3277E-04	-2.5772E-07	5.3010E-06	6.1686E-05
8	1.2425E-03	-1.2484E-03	1.3394E-04	-2.5772E-07	5.3010E-06	6.1686E-05
9	1.5201E-03	-1.2484E-03	1.3510E-04	-2.5772E-07	5.3010E-06	6.1686E-05
10	9.4104E-04	-1.2495E-03	1.3277E-04	-2.5772E-07	5.3010E-06	6.1686E-05
11	1.2186E-03	-1.2495E-03	1.3394E-04	-2.5772E-07	5.3010E-06	6.1686E-05
12	1.4962E-03	-1.2495E-03	1.3510E-04	-2.5772E-07	5.3010E-06	6.1686E-05
13	9.1718E-04	-1.2507E-03	1.3277E-04	-2.5772E-07	5.3010E-06	6.1686E-05
14	1.1948E-03	-1.2507E-03	1.3394E-04	-2.5772E-07	5.3010E-06	6.1686E-05
15	1.4724E-03	-1.2507E-03	1.3510E-04	-2.5772E-07	5.3010E-06	6.1686E-05
MINIMUM	9.1718E-04	-1.2507E-03	1.3277E-04	-2.5772E-07	5.3010E-06	6.1686E-05
Pile N.	13	13	1	1	1	1
MAXIMUM	1.5678E-03	-1.2461E-03	1.3510E-04	-2.5772E-07	5.3010E-06	6.1686E-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	1769.0	-288.31	31.853	-0.085897	-96.143	-852.75
2	2251.3	-286.84	32.011	-0.085897	-96.852	-849.84
3	2733.6	-341.72	38.418	-0.085897	-110.28	-961.22
4	1727.6	-267.61	29.563	-0.085897	-91.251	-809.01
5	2209.9	-267.18	29.814	-0.085897	-92.152	-808.26
6	2692.1	-330.88	37.176	-0.085897	-107.82	-940.24
7	1686.2	-267.52	29.521	-0.085897	-91.157	-809.13
8	2168.4	-267.10	29.773	-0.085897	-92.060	-808.41
9	2650.7	-331.15	37.166	-0.085897	-107.79	-941.16
10	1644.7	-268.03	29.545	-0.085897	-91.205	-810.56
11	2127.0	-267.62	29.797	-0.085897	-92.110	-809.84
12	2609.2	-331.48	37.163	-0.085897	-107.79	-942.18
13	1603.3	-288.60	31.745	-0.085897	-95.903	-854.68
14	2085.5	-287.12	31.902	-0.085897	-96.610	-851.74
15	2567.8	-342.61	38.351	-0.085897	-110.13	-964.48
MINIMUM	1603.3	-342.61	29.521	-0.085897	-110.28	-964.48
Pile N.	13	15	7	1	3	15
MAXIMUM	2733.6	-267.10	38.418	-0.085897	-91.157	-808.26
Pile N.	3	8	3	1	7	5

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
1	1.0126E-03	-1.2461E-03	1.3277E-04	-2.5772E-07	5.3010E-06	6.1686E-05
2	1.2902E-03	-1.2461E-03	1.3394E-04	-2.5772E-07	5.3010E-06	6.1686E-05
3	1.5678E-03	-1.2461E-03	1.3510E-04	-2.5772E-07	5.3010E-06	6.1686E-05
4	9.8875E-04	-1.2472E-03	1.3277E-04	-2.5772E-07	5.3010E-06	6.1686E-05
5	1.2663E-03	-1.2472E-03	1.3394E-04	-2.5772E-07	5.3010E-06	6.1686E-05
6	1.5439E-03	-1.2472E-03	1.3510E-04	-2.5772E-07	5.3010E-06	6.1686E-05
7	9.6489E-04	-1.2484E-03	1.3277E-04	-2.5772E-07	5.3010E-06	6.1686E-05
8	1.2425E-03	-1.2484E-03	1.3394E-04	-2.5772E-07	5.3010E-06	6.1686E-05
9	1.5201E-03	-1.2484E-03	1.3510E-04	-2.5772E-07	5.3010E-06	6.1686E-05
10	9.4104E-04	-1.2495E-03	1.3277E-04	-2.5772E-07	5.3010E-06	6.1686E-05
11	1.2186E-03	-1.2495E-03	1.3394E-04	-2.5772E-07	5.3010E-06	6.1686E-05
12	1.4962E-03	-1.2495E-03	1.3510E-04	-2.5772E-07	5.3010E-06	6.1686E-05
13	9.1718E-04	-1.2507E-03	1.3277E-04	-2.5772E-07	5.3010E-06	6.1686E-05
14	1.1948E-03	-1.2507E-03	1.3394E-04	-2.5772E-07	5.3010E-06	6.1686E-05
15	1.4724E-03	-1.2507E-03	1.3510E-04	-2.5772E-07	5.3010E-06	6.1686E-05
MINIMUM	9.1718E-04	-1.2507E-03	1.3277E-04	-2.5772E-07	5.3010E-06	6.1686E-05

APPALTATORE:

Consorzio

Soci



ITINERARIO NAPOLI – BARI

PROGETTAZIONE:

Mandataria

Mandanti



RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

PROGETTO ESECUTIVO

RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO
IF28	01	E ZZ CL	VI0403 001	B	78 di 354

Pile N.	13	13	1	1	1	1
MAXIMUM	1.5678E-03	-1.2461E-03	1.3510E-04	-2.5772E-07	5.3010E-06	6.1686E-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	1769.0	-288.31	31.853	-0.085897	-96.143	-852.75
2	2251.3	-286.84	32.011	-0.085897	-96.852	-849.84
3	2733.6	-341.72	38.418	-0.085897	-110.28	-961.22
4	1727.6	-267.61	29.563	-0.085897	-91.251	-809.01
5	2209.9	-267.18	29.814	-0.085897	-92.152	-808.26
6	2692.1	-330.88	37.176	-0.085897	-107.82	-940.24
7	1686.2	-267.52	29.521	-0.085897	-91.157	-809.13
8	2168.4	-267.10	29.773	-0.085897	-92.060	-808.41
9	2650.7	-331.15	37.166	-0.085897	-107.80	-941.16
10	1644.7	-268.03	29.545	-0.085897	-91.205	-810.56
11	2127.0	-267.62	29.797	-0.085897	-92.110	-809.84
12	2609.2	-331.48	37.163	-0.085897	-107.79	-942.18
13	1603.3	-288.60	31.745	-0.085897	-95.903	-854.68
14	2085.5	-287.12	31.902	-0.085897	-96.610	-851.74
15	2567.8	-342.61	38.351	-0.085897	-110.13	-964.48
MINIMUM	1603.3	-342.61	29.521	-0.085897	-110.28	-964.48
Pile N.	13	15	7	1	3	15
MAXIMUM	2733.6	-267.10	38.418	-0.085897	-91.157	-808.26
Pile N.	3	8	3	1	7	5

PILE GROUP	STRESS, KN/ M**2
1	3591.0
2	3855.4
3	4466.9
4	3434.7
5	3705.7
6	4379.7
7	3411.6
8	3682.7
9	4359.0
10	3392.5
11	3663.5
12	4338.6
13	3502.9
14	3767.3
15	4382.8
MINIMUM	3392.5
Pile N.	10
MAXIMUM	4466.9
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	-1.2461E-03	-3.8237E-06	-403.76	-96.143	-288.33	-10.812	-152.65	-2.6028	1001.1	7.8279E+06	7.8279E+06
x( M)	0.0000	9.9000	5.7600	0.0000	0.0000	7.9200	4.1400	9.0000	18.000	0.0000	0.0000
2	-1.2461E-03	-3.8657E-06	-402.27	-96.852	-286.86	-10.844	-151.38	-2.5839	1274.0	7.8279E+06	7.8279E+06
x( M)	0.0000	9.9000	5.7600	0.0000	0.0000	7.9200	4.1400	9.0000	18.000	0.0000	0.0000
3	-1.2461E-03	-3.6151E-06	-458.88	-110.28	-341.75	-13.743	-204.04	-4.2839	1546.9	7.8279E+06	7.8279E+06
x( M)	0.0000	9.3600	5.5800	0.0000	0.0000	7.5600	4.1400	9.0000	18.000	0.0000	0.0000
4	-1.2472E-03	-3.9370E-06	-381.86	-91.251	-267.62	-9.7885	-134.04	-2.2397	977.62	7.8279E+06	7.8279E+06
x( M)	0.0000	10.260	5.9400	0.0000	0.0000	8.1000	4.1400	10.620	18.000	0.0000	0.0000
5	-1.2472E-03	-3.9764E-06	-381.51	-92.152	-267.20	-9.8637	-133.73	-2.2566	1250.5	7.8279E+06	7.8279E+06
x( M)	0.0000	10.260	5.9400	0.0000	0.0000	8.1000	4.1400	10.620	18.000	0.0000	0.0000
6	-1.2472E-03	-3.6722E-06	-448.08	-107.82	-330.91	-13.155	-193.06	-3.9538	1523.4	7.8279E+06	7.8279E+06
x( M)	0.0000	9.5400	5.5800	0.0000	0.0000	7.5600	4.1400	9.0000	18.000	0.0000	0.0000
7	-1.2484E-03	-3.9385E-06	-381.79	-91.157	-267.53	-9.7693	-133.82	-2.2350	954.17	7.8279E+06	7.8279E+06
x( M)	0.0000	10.260	5.9400	0.0000	0.0000	8.1000	4.1400	10.620	18.000	0.0000	0.0000
8	-1.2484E-03	-3.9777E-06	-381.46	-92.060	-267.12	-9.8451	-133.52	-2.2521	1227.1	7.8279E+06	7.8279E+06
x( M)	0.0000	10.260	5.9400	0.0000	0.0000	8.1000	4.1400	10.620	18.000	0.0000	0.0000
9	-1.2484E-03	-3.6719E-06	-448.40	-107.80	-331.18	-13.150	-193.13	-3.9512	1500.0	7.8279E+06	7.8279E+06
x( M)	0.0000	9.5400	5.5800	0.0000	0.0000	7.5600	4.1400	9.0000	18.000	0.0000	0.0000
10	-1.2495E-03	-3.9364E-06	-382.38	-91.205	-268.05	-9.7800	-134.12	-2.2379	930.71	7.8279E+06	7.8279E+06
x( M)	0.0000	10.260	5.9400	0.0000	0.0000	8.1000	4.1400	10.620	18.000	0.0000	0.0000
11	-1.2495E-03	-3.9757E-06	-382.05	-92.110	-267.64	-9.8559	-133.82	-2.2550	1203.6	7.8279E+06	7.8279E+06
x( M)	0.0000	10.260	5.9400	0.0000	0.0000	8.1000	4.1400	10.620	18.000	0.0000	0.0000
12	-1.2495E-03	-3.6713E-06	-448.76	-107.79	-331.51	-13.148	-193.25	-3.9500	1476.5	7.8279E+06	7.8279E+06
x( M)	0.0000	9.5400	5.5800	0.0000	0.0000	7.5600	4.1400	9.0000	18.000	0.0000	0.0000
13	-1.2507E-03	-3.8247E-06	-404.14	-95.903	-288.61	-10.761	-152.24	-2.5718	907.26	7.8279E+06	7.8279E+06
x( M)	0.0000	9.9000	5.7600	0.0000	0.0000	7.9200	4.1400	9.0000	18.000	0.0000	0.0000
14	-1.2507E-03	-3.8676E-06	-402.64	-96.610	-287.14	-10.792	-150.97	-2.5526	1180.2	7.8279E+06	7.8279E+06
x( M)	0.0000	10.080	5.7600	0.0000	0.0000	7.9200	4.1400	9.0000	18.000	0.0000	0.0000

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   		
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>		

15	-1.2507E-03	-3.6147E-06	-459.95	-110.13	-342.63	-13.709	-204.09	-4.2658	1453.1	7.8279E+06	7.8279E+06
x( M)	0.0000	9.3600	5.5800	0.0000	0.0000	7.5600	4.1400	9.0000	18.000	0.0000	0.0000
Min. Pile N.	-1.2507E-03	-3.9777E-06	-459.95	-110.28	-342.63	-13.743	-204.09	-4.2839	907.26	7.8279E+06	7.8279E+06
	13	8	15	3	15	3	15	3	13	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2	KN- M**2	KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	3.5523E-05	1.3278E-04	852.75	43.442	100.46	31.855	24.514	16.642	3591.0	7.8279E+06	7.8279E+06
x( M)	9.9000	0.0000	0.0000	5.9400	7.9200	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
2	3.5596E-05	1.3393E-04	849.84	43.689	99.854	32.013	24.139	16.661	3855.4	7.8279E+06	7.8279E+06
x( M)	9.9000	0.0000	0.0000	5.9400	7.9200	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
3	3.2953E-05	1.3509E-04	961.22	50.290	125.31	38.422	39.206	22.657	4466.9	7.8279E+06	7.8279E+06
x( M)	9.3600	0.0000	0.0000	5.5800	7.5600	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
4	3.6597E-05	1.3278E-04	809.01	41.040	91.059	29.565	20.763	14.602	3434.7	7.8279E+06	7.8279E+06
x( M)	10.260	0.0000	0.0000	5.9400	8.1000	0.0000	10.620	4.1400	0.0000	0.0000	0.0000
5	3.6630E-05	1.3393E-04	808.26	41.374	90.934	29.816	20.730	14.708	3705.7	7.8279E+06	7.8279E+06
x( M)	10.260	0.0000	0.0000	5.9400	8.1000	0.0000	10.620	4.1400	0.0000	0.0000	0.0000
6	3.3489E-05	1.3509E-04	940.24	49.034	120.16	37.179	36.279	21.417	4379.7	7.8279E+06	7.8279E+06
x( M)	9.5400	0.0000	0.0000	5.5800	7.5600	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
7	3.6648E-05	1.3278E-04	809.13	40.991	90.972	29.523	20.741	14.562	3411.6	7.8279E+06	7.8279E+06
x( M)	10.260	0.0000	0.0000	5.9400	8.1000	0.0000	10.620	4.1400	0.0000	0.0000	0.0000
8	3.6680E-05	1.3393E-04	808.41	41.327	90.855	29.775	20.710	14.669	3682.7	7.8279E+06	7.8279E+06
x( M)	10.260	0.0000	0.0000	5.9400	8.1000	0.0000	10.620	4.1400	0.0000	0.0000	0.0000
9	3.3519E-05	1.3509E-04	941.16	49.020	120.23	37.170	36.290	21.403	4359.0	7.8279E+06	7.8279E+06
x( M)	9.5400	0.0000	0.0000	5.5800	7.5600	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
10	3.6664E-05	1.3278E-04	810.56	41.015	91.159	29.547	20.788	14.580	3392.5	7.8279E+06	7.8279E+06
x( M)	10.260	0.0000	0.0000	5.9400	8.1000	0.0000	10.620	4.1400	0.0000	0.0000	0.0000
11	3.6696E-05	1.3393E-04	809.84	41.351	91.042	29.799	20.757	14.687	3663.5	7.8279E+06	7.8279E+06
x( M)	10.260	0.0000	0.0000	5.9400	8.1000	0.0000	10.620	4.1400	0.0000	0.0000	0.0000
12	3.3547E-05	1.3509E-04	942.18	49.013	120.33	37.166	36.315	21.394	4338.6	7.8279E+06	7.8279E+06
x( M)	9.5400	0.0000	0.0000	5.5800	7.5600	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
13	3.5676E-05	1.3278E-04	854.68	43.325	100.39	31.747	24.319	16.529	3502.9	7.8279E+06	7.8279E+06
x( M)	9.9000	0.0000	0.0000	5.9400	7.9200	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
14	3.5747E-05	1.3393E-04	851.74	43.570	99.777	31.904	23.942	16.547	3767.3	7.8279E+06	7.8279E+06
x( M)	9.9000	0.0000	0.0000	5.9400	7.9200	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
15	3.3082E-05	1.3509E-04	964.48	50.209	125.49	38.354	39.195	22.569	4382.8	7.8279E+06	7.8279E+06
x( M)	9.3600	0.0000	0.0000	5.5800	7.5600	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
Max. Pile N.	3.6696E-05	1.3509E-04	964.48	50.290	125.49	38.422	39.206	22.657	4466.9	7.8279E+06	7.8279E+06
	11	3	15	3	15	3	3	3	3	1	1

LOAD CASE : 3  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp



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	0.5879	1.0000
2	0.5817	1.0000
3	0.8661	1.0000
4	0.4964	1.0000
5	0.4951	1.0000
6	0.8034	1.0000
7	0.4950	1.0000
8	0.4938	1.0000
9	0.8032	1.0000
10	0.4960	1.0000
11	0.4948	1.0000
12	0.8032	1.0000
13	0.5845	1.0000
14	0.5783	1.0000
15	0.8638	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
30606.6	-3983.04	405.716
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-81.2061	2358.43	3224.71

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>							

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL , M 1.16882E-03	HORIZONTAL Y, M -1.06551E-03	HORIZONTAL Z, M 1.05456E-04
ANGLE ROT. X,RAD 1.03184E-07	ANGLE ROT. Y,RAD 3.39889E-06	ANGLE ROT. Z,RAD 4.29284E-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	1.0062E-03	-1.0664E-03	1.0592E-04	1.0318E-07	3.3989E-06	4.2928E-05
2	1.1994E-03	-1.0664E-03	1.0546E-04	1.0318E-07	3.3989E-06	4.2928E-05
3	1.3926E-03	-1.0664E-03	1.0499E-04	1.0318E-07	3.3989E-06	4.2928E-05
4	9.9094E-04	-1.0660E-03	1.0592E-04	1.0318E-07	3.3989E-06	4.2928E-05
5	1.1841E-03	-1.0660E-03	1.0546E-04	1.0318E-07	3.3989E-06	4.2928E-05
6	1.3773E-03	-1.0660E-03	1.0499E-04	1.0318E-07	3.3989E-06	4.2928E-05
7	9.7564E-04	-1.0655E-03	1.0592E-04	1.0318E-07	3.3989E-06	4.2928E-05
8	1.1688E-03	-1.0655E-03	1.0546E-04	1.0318E-07	3.3989E-06	4.2928E-05
9	1.3620E-03	-1.0655E-03	1.0499E-04	1.0318E-07	3.3989E-06	4.2928E-05
10	9.6035E-04	-1.0650E-03	1.0592E-04	1.0318E-07	3.3989E-06	4.2928E-05
11	1.1535E-03	-1.0650E-03	1.0546E-04	1.0318E-07	3.3989E-06	4.2928E-05
12	1.3467E-03	-1.0650E-03	1.0499E-04	1.0318E-07	3.3989E-06	4.2928E-05
13	9.4505E-04	-1.0646E-03	1.0592E-04	1.0318E-07	3.3989E-06	4.2928E-05
14	1.1382E-03	-1.0646E-03	1.0546E-04	1.0318E-07	3.3989E-06	4.2928E-05
15	1.3314E-03	-1.0646E-03	1.0499E-04	1.0318E-07	3.3989E-06	4.2928E-05
MINIMUM	9.4505E-04	-1.0664E-03	1.0499E-04	1.0318E-07	3.3989E-06	4.2928E-05
Pile N.	13	1	3	1	1	1
MAXIMUM	1.3926E-03	-1.0646E-03	1.0592E-04	1.0318E-07	3.3989E-06	4.2928E-05
Pile N.	3	13	1	1	1	1

\* PILE TOP REACTIONS \*





PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
*****	*****	*****	*****	*****	*****	*****
1	1758.0	-259.75	26.577	0.034391	-81.184	-781.03
2	2093.6	-258.50	26.322	0.034391	-80.511	-778.51
3	2429.2	-307.00	31.052	0.034391	-89.992	-877.07
4	1731.4	-241.18	24.709	0.034391	-77.191	-741.29
5	2067.0	-240.85	24.556	0.034391	-76.732	-740.70
6	2402.6	-297.10	30.075	0.034391	-88.060	-857.37
7	1704.8	-240.77	24.681	0.034391	-77.128	-740.27
8	2040.4	-240.46	24.529	0.034391	-76.672	-739.71
9	2376.1	-296.94	30.073	0.034391	-88.056	-856.88
10	1678.3	-240.89	24.705	0.034391	-77.180	-740.39
11	2013.9	-240.58	24.553	0.034391	-76.724	-739.83
12	2349.5	-296.81	30.075	0.034391	-88.061	-856.46
13	1651.7	-258.66	26.520	0.034391	-81.061	-778.15
14	1987.3	-257.41	26.264	0.034391	-80.388	-775.63
15	2322.9	-306.13	31.025	0.034391	-89.940	-874.70
MINIMUM	1651.7	-307.00	24.529	0.034391	-89.992	-877.07
Pile N.	13	3	8	1	3	3
MAXIMUM	2429.2	-240.46	31.052	0.034391	-76.672	-739.71
Pile N.	3	8	3	1	8	8

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	1.0062E-03	-1.0664E-03	1.0592E-04	1.0318E-07	3.3989E-06	4.2928E-05
2	1.1994E-03	-1.0664E-03	1.0546E-04	1.0318E-07	3.3989E-06	4.2928E-05
3	1.3926E-03	-1.0664E-03	1.0499E-04	1.0318E-07	3.3989E-06	4.2928E-05
4	9.9094E-04	-1.0660E-03	1.0592E-04	1.0318E-07	3.3989E-06	4.2928E-05
5	1.1841E-03	-1.0660E-03	1.0546E-04	1.0318E-07	3.3989E-06	4.2928E-05
6	1.3773E-03	-1.0660E-03	1.0499E-04	1.0318E-07	3.3989E-06	4.2928E-05
7	9.7564E-04	-1.0655E-03	1.0592E-04	1.0318E-07	3.3989E-06	4.2928E-05
8	1.1688E-03	-1.0655E-03	1.0546E-04	1.0318E-07	3.3989E-06	4.2928E-05
9	1.3620E-03	-1.0655E-03	1.0499E-04	1.0318E-07	3.3989E-06	4.2928E-05
10	9.6035E-04	-1.0650E-03	1.0592E-04	1.0318E-07	3.3989E-06	4.2928E-05
11	1.1535E-03	-1.0650E-03	1.0546E-04	1.0318E-07	3.3989E-06	4.2928E-05
12	1.3467E-03	-1.0650E-03	1.0499E-04	1.0318E-07	3.3989E-06	4.2928E-05
13	9.4505E-04	-1.0646E-03	1.0592E-04	1.0318E-07	3.3989E-06	4.2928E-05
14	1.1382E-03	-1.0646E-03	1.0546E-04	1.0318E-07	3.3989E-06	4.2928E-05
15	1.3314E-03	-1.0646E-03	1.0499E-04	1.0318E-07	3.3989E-06	4.2928E-05
MINIMUM	9.4505E-04	-1.0664E-03	1.0499E-04	1.0318E-07	3.3989E-06	4.2928E-05



<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>				
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>					
<b>COMMESSA</b> IF28	<b>LOTTO</b> 01	<b>CODIFICA</b> E ZZ CL	<b>DOCUMENTO</b> VI0403 001	<b>REV.</b> B	<b>FOGLIO</b> 81 di 354

Pile N.	13	1	3	1	1	1
MAXIMUM	1.3926E-03	-1.0646E-03	1.0592E-04	1.0318E-07	3.3989E-06	4.2928E-05
Pile N.	3	13	1	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	1758.0	-259.75	26.577	0.034391	-81.184	-781.03
2	2093.6	-258.50	26.322	0.034391	-80.511	-778.51
3	2429.2	-307.00	31.052	0.034391	-89.992	-877.07
4	1731.4	-241.18	24.709	0.034391	-77.191	-741.29
5	2067.0	-240.85	24.556	0.034391	-76.732	-740.70
6	2402.6	-297.10	30.075	0.034391	-88.060	-857.37
7	1704.8	-240.77	24.681	0.034391	-77.128	-740.27
8	2040.4	-240.46	24.529	0.034391	-76.672	-739.71
9	2376.1	-296.94	30.073	0.034391	-88.056	-856.88
10	1678.3	-240.89	24.705	0.034391	-77.180	-740.39
11	2013.9	-240.58	24.553	0.034391	-76.724	-739.83
12	2349.5	-296.81	30.075	0.034391	-88.061	-856.46
13	1651.7	-258.66	26.520	0.034391	-81.061	-778.15
14	1987.3	-257.41	26.264	0.034391	-80.388	-775.63
15	2322.9	-306.13	31.025	0.034391	-89.940	-874.70
MINIMUM	1651.7	-307.00	24.529	0.034391	-89.992	-877.07
Pile N.	13	3	8	1	3	3
MAXIMUM	2429.2	-240.46	31.052	0.034391	-76.672	-739.71
Pile N.	3	8	3	1	8	8

PILE GROUP	STRESS, KN/ M**2
1	3364.7
2	3546.8
3	4035.6
4	3229.1
5	3417.1
6	3960.8
7	3211.0
8	3399.1
9	3944.3
10	3196.3
11	3384.4
12	3928.0
13	3295.9
14	3478.0
15	3968.3
MINIMUM	3196.3
Pile N.	10
MAXIMUM	4035.6
Pile N.	3

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2	KN- M**2	KN- M**2
1	-1.0664E-03	-3.1260E-06	-354.47	-81.184	-259.77	-8.8338	-141.06	-2.1631	994.81	7.8279E+06	7.8279E+06
x( M)	0.0000	9.9000	5.7600	0.0000	0.0000	7.9200	4.1400	9.0000	18.000	0.0000	0.0000
2	-1.0664E-03	-3.1177E-06	-353.18	-80.511	-258.52	-8.7409	-139.92	-2.1208	1184.7	7.8279E+06	7.8279E+06
x( M)	0.0000	9.9000	5.7600	0.0000	0.0000	7.9200	4.1400	9.0000	18.000	0.0000	0.0000
3	-1.0664E-03	-2.8801E-06	-403.42	-89.992	-307.03	-10.954	-188.32	-3.4369	1374.6	7.8279E+06	7.8279E+06
x( M)	0.0000	9.3600	5.5800	0.0000	0.0000	7.5600	4.1400	9.0000	18.000	0.0000	0.0000
4	-1.0660E-03	-3.2130E-06	-334.51	-77.191	-241.19	-7.9935	-123.94	-1.8216	979.77	7.8279E+06	7.8279E+06
x( M)	0.0000	10.260	5.9400	0.0000	0.0000	8.1000	4.1400	10.620	18.000	0.0000	0.0000
5	-1.0660E-03	-3.2008E-06	-334.23	-76.732	-240.87	-7.9470	-123.69	-1.8106	1169.7	7.8279E+06	7.8279E+06
x( M)	0.0000	10.260	5.9400	0.0000	0.0000	8.1000	4.1400	10.620	18.000	0.0000	0.0000
6	-1.0660E-03	-2.9215E-06	-393.50	-88.060	-297.12	-10.498	-178.14	-3.1802	1359.6	7.8279E+06	7.8279E+06
x( M)	0.0000	9.5400	5.5800	0.0000	0.0000	7.5600	4.1400	9.0000	18.000	0.0000	0.0000
7	-1.0655E-03	-3.2148E-06	-334.04	-77.128	-240.79	-7.9801	-123.63	-1.8182	964.73	7.8279E+06	7.8279E+06
x( M)	0.0000	10.260	5.9400	0.0000	0.0000	8.1000	4.1400	10.620	18.000	0.0000	0.0000
8	-1.0655E-03	-3.2024E-06	-333.78	-76.672	-240.48	-7.9342	-123.39	-1.8073	1154.7	7.8279E+06	7.8279E+06
x( M)	0.0000	10.260	5.9400	0.0000	0.0000	8.1000	4.1400	10.620	18.000	0.0000	0.0000
9	-1.0655E-03	-2.9218E-06	-393.31	-88.056	-296.96	-10.497	-178.05	-3.1795	1344.6	7.8279E+06	7.8279E+06
x( M)	0.0000	9.5400	5.5800	0.0000	0.0000	7.5600	4.1400	9.0000	18.000	0.0000	0.0000
10	-1.0650E-03	-3.2136E-06	-334.15	-77.180	-240.90	-7.9904	-123.79	-1.8208	949.70	7.8279E+06	7.8279E+06
x( M)	0.0000	10.260	5.9400	0.0000	0.0000	8.1000	4.1400	10.620	18.000	0.0000	0.0000
11	-1.0650E-03	-3.2013E-06	-333.89	-76.724	-240.60	-7.9445	-123.56	-1.8099	1139.6	7.8279E+06	7.8279E+06
x( M)	0.0000	10.260	5.9400	0.0000	0.0000	8.1000	4.1400	10.620	18.000	0.0000	0.0000
12	-1.0650E-03	-2.9219E-06	-393.15	-88.061	-296.83	-10.497	-178.00	-3.1798	1329.5	7.8279E+06	7.8279E+06
x( M)	0.0000	9.5400	5.5800	0.0000	0.0000	7.5600	4.1400	9.0000	18.000	0.0000	0.0000
13	-1.0646E-03	-3.1293E-06	-353.20	-81.061	-258.67	-8.8053	-140.28	-2.1458	934.66	7.8279E+06	7.8279E+06
x( M)	0.0000	9.9000	5.7600	0.0000	0.0000	7.9200	4.1400	9.0000	18.000	0.0000	0.0000
14	-1.0646E-03	-3.1208E-06	-351.91	-80.388	-257.43	-8.7123	-139.15	-2.1036	1124.6	7.8279E+06	7.8279E+06
x( M)	0.0000	9.9000	5.7600	0.0000	0.0000	7.9200	4.1400	9.0000	18.000	0.0000	0.0000

<b>APPALTATORE:</b> Consorzio <span style="margin-left: 100px;">Soci</span> 		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <span style="margin-left: 100px;">Mandanti</span> 		
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>		

15	-1.0646E-03	-2.8822E-06	-402.44	-89.940	-306.15	-10.940	-187.74	-3.4288	1314.5	7.8279E+06	7.8279E+06
x( M)	0.0000	9.3600	5.5800	0.0000	0.0000	7.5600	4.1400	9.0000	18.000	0.0000	0.0000
Min. Pile N.	-1.0664E-03	-3.2148E-06	-403.42	-89.992	-307.03	-10.954	-188.32	-3.4369	934.66	7.8279E+06	7.8279E+06
	1	7	3	3	3	3	3	3	13	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2	KN- M**2	KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	3.1198E-05	1.0592E-04	781.03	35.489	88.171	26.579	21.820	14.280	3364.7	7.8279E+06	7.8279E+06
x( M)	9.9000	0.0000	0.0000	5.7600	7.9200	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
2	3.1261E-05	1.0546E-04	778.51	35.198	87.648	26.324	21.495	14.098	3546.8	7.8279E+06	7.8279E+06
x( M)	9.9000	0.0000	0.0000	5.7600	7.9200	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
3	2.8986E-05	1.0499E-04	877.07	40.055	110.26	31.054	34.687	18.876	4035.6	7.8279E+06	7.8279E+06
x( M)	9.3600	0.0000	0.0000	5.5800	7.5600	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
4	3.2041E-05	1.0592E-04	741.29	33.516	79.764	24.711	18.127	12.555	3229.1	7.8279E+06	7.8279E+06
x( M)	10.260	0.0000	0.0000	5.9400	8.1000	0.0000	10.620	4.1400	0.0000	0.0000	0.0000
5	3.2066E-05	1.0546E-04	740.70	33.337	79.662	24.558	18.101	12.471	3417.1	7.8279E+06	7.8279E+06
x( M)	10.260	0.0000	0.0000	5.9400	8.1000	0.0000	10.620	4.1400	0.0000	0.0000	0.0000
6	2.9394E-05	1.0499E-04	857.37	39.073	105.69	30.077	32.120	17.866	3960.8	7.8279E+06	7.8279E+06
x( M)	9.3600	0.0000	0.0000	5.5800	7.5600	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
7	3.2046E-05	1.0592E-04	740.27	33.484	79.597	24.682	18.085	12.530	3211.0	7.8279E+06	7.8279E+06
x( M)	10.260	0.0000	0.0000	5.9400	8.1000	0.0000	10.620	4.1400	0.0000	0.0000	0.0000
8	3.2069E-05	1.0546E-04	739.71	33.306	79.501	24.530	18.060	12.447	3399.1	7.8279E+06	7.8279E+06
x( M)	10.260	0.0000	0.0000	5.9400	8.1000	0.0000	10.620	4.1400	0.0000	0.0000	0.0000
9	2.9384E-05	1.0499E-04	856.88	39.072	105.63	30.076	32.098	17.866	3944.3	7.8279E+06	7.8279E+06
x( M)	9.3600	0.0000	0.0000	5.5800	7.5600	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
10	3.2019E-05	1.0592E-04	740.39	33.511	79.662	24.706	18.102	12.553	3196.3	7.8279E+06	7.8279E+06
x( M)	10.260	0.0000	0.0000	5.9400	8.1000	0.0000	10.620	4.1400	0.0000	0.0000	0.0000
11	3.2043E-05	1.0546E-04	739.83	33.333	79.566	24.555	18.077	12.470	3384.4	7.8279E+06	7.8279E+06
x( M)	10.260	0.0000	0.0000	5.9400	8.1000	0.0000	10.620	4.1400	0.0000	0.0000	0.0000
12	2.9372E-05	1.0499E-04	856.46	39.074	105.58	30.078	32.086	17.869	3928.0	7.8279E+06	7.8279E+06
x( M)	9.3600	0.0000	0.0000	5.5800	7.5600	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
13	3.1177E-05	1.0592E-04	778.15	35.424	87.731	26.521	21.612	14.228	3295.9	7.8279E+06	7.8279E+06
x( M)	9.9000	0.0000	0.0000	5.7600	7.9200	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
14	3.1238E-05	1.0546E-04	775.63	35.133	87.208	26.266	21.287	14.047	3478.0	7.8279E+06	7.8279E+06
x( M)	9.9000	0.0000	0.0000	5.7600	7.9200	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
15	2.8955E-05	1.0499E-04	874.70	40.029	109.92	31.028	34.545	18.854	3968.3	7.8279E+06	7.8279E+06
x( M)	9.3600	0.0000	0.0000	5.5800	7.5600	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
Max. Pile N.	3.2069E-05	1.0592E-04	877.07	40.055	110.26	31.054	34.687	18.876	4035.6	7.8279E+06	7.8279E+06
	8	1	3	3	3	3	3	3	3	1	1

LOAD CASE : 4  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp



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	0.5938	1.0000
2	0.5862	1.0000
3	0.8661	1.0000
4	0.4979	1.0000
5	0.4951	1.0000
6	0.8001	1.0000
7	0.4959	1.0000
8	0.4932	1.0000
9	0.7995	1.0000
10	0.4969	1.0000
11	0.4943	1.0000
12	0.7995	1.0000
13	0.5845	1.0000
14	0.5770	1.0000
15	0.8598	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
33094.9	-4250.16	696.757
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-124.514	6548.49	3800.87

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>							

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL , M 1.26430E-03	HORIZONTAL Y, M -1.15108E-03	HORIZONTAL Z, M 1.90294E-04
ANGLE ROT. X,RAD 1.65804E-07	ANGLE ROT. Y,RAD 8.16711E-06	ANGLE ROT. Z,RAD 4.68759E-05

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

PILE GROUP *****	DISP. X, M *****	DISP. Y, M *****	DISP. Z, M *****	ROT. X,RAD *****	ROT. Y,RAD *****	ROT. Z,RAD *****
1	1.1269E-03	-1.1526E-03	1.9104E-04	1.6580E-07	8.1671E-06	4.6876E-05
2	1.3378E-03	-1.1526E-03	1.9029E-04	1.6580E-07	8.1671E-06	4.6876E-05
3	1.5487E-03	-1.1526E-03	1.8955E-04	1.6580E-07	8.1671E-06	4.6876E-05
4	1.0901E-03	-1.1518E-03	1.9104E-04	1.6580E-07	8.1671E-06	4.6876E-05
5	1.3010E-03	-1.1518E-03	1.9029E-04	1.6580E-07	8.1671E-06	4.6876E-05
6	1.5120E-03	-1.1518E-03	1.8955E-04	1.6580E-07	8.1671E-06	4.6876E-05
7	1.0534E-03	-1.1511E-03	1.9104E-04	1.6580E-07	8.1671E-06	4.6876E-05
8	1.2643E-03	-1.1511E-03	1.9029E-04	1.6580E-07	8.1671E-06	4.6876E-05
9	1.4752E-03	-1.1511E-03	1.8955E-04	1.6580E-07	8.1671E-06	4.6876E-05
10	1.0166E-03	-1.1503E-03	1.9104E-04	1.6580E-07	8.1671E-06	4.6876E-05
11	1.2275E-03	-1.1503E-03	1.9029E-04	1.6580E-07	8.1671E-06	4.6876E-05
12	1.4385E-03	-1.1503E-03	1.8955E-04	1.6580E-07	8.1671E-06	4.6876E-05
13	9.7985E-04	-1.1496E-03	1.9104E-04	1.6580E-07	8.1671E-06	4.6876E-05
14	1.1908E-03	-1.1496E-03	1.9029E-04	1.6580E-07	8.1671E-06	4.6876E-05
15	1.4017E-03	-1.1496E-03	1.8955E-04	1.6580E-07	8.1671E-06	4.6876E-05
MINIMUM	9.7985E-04	-1.1526E-03	1.8955E-04	1.6580E-07	8.1671E-06	4.6876E-05
Pile N.	13	1	3	1	1	1
MAXIMUM	1.5487E-03	-1.1496E-03	1.9104E-04	1.6580E-07	8.1671E-06	4.6876E-05
Pile N.	3	13	1	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP *****	FOR. X, KN *****	FOR. Y, KN *****	FOR. Z, KN *****	MOM X, KN- M *****	MOM Y, KN- M *****	MOM Z, KN- M *****
1	1967.6	-278.44	45.796	0.055262	-137.13	-837.28
2	2334.0	-276.83	45.325	0.055262	-135.93	-834.04
3	2700.5	-327.97	53.483	0.055262	-152.25	-937.98
4	1903.7	-257.62	42.394	0.055262	-129.88	-792.68
5	2270.2	-256.93	42.088	0.055262	-129.02	-791.31
6	2636.7	-316.70	51.678	0.055262	-148.68	-915.45
7	1839.9	-257.00	42.322	0.055262	-129.72	-791.09
8	2206.3	-256.34	42.022	0.055262	-128.87	-789.80
9	2572.8	-316.40	51.666	0.055262	-148.66	-914.57
10	1776.0	-257.07	42.366	0.055262	-129.81	-791.01
11	2142.5	-256.42	42.066	0.055262	-128.97	-789.73
12	2509.0	-316.20	51.672	0.055262	-148.67	-913.91
13	1712.2	-275.86	45.506	0.055262	-136.51	-830.88
14	2078.6	-274.25	45.035	0.055262	-135.31	-827.62
15	2445.1	-326.12	53.339	0.055262	-151.96	-933.26
MINIMUM	1712.2	-327.97	42.022	0.055262	-152.25	-937.98
Pile N.	13	3	8	1	3	3
MAXIMUM	2700.5	-256.34	53.483	0.055262	-128.87	-789.73
Pile N.	3	8	3	1	8	11

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

PILE GROUP *****	DISP. x, M *****	DISP. y, M *****	DISP. z, M *****	ROT. x,RAD *****	ROT. y,RAD *****	ROT. z,RAD *****
1	1.1269E-03	-1.1526E-03	1.9104E-04	1.6580E-07	8.1671E-06	4.6876E-05
2	1.3378E-03	-1.1526E-03	1.9029E-04	1.6580E-07	8.1671E-06	4.6876E-05
3	1.5487E-03	-1.1526E-03	1.8955E-04	1.6580E-07	8.1671E-06	4.6876E-05
4	1.0901E-03	-1.1518E-03	1.9104E-04	1.6580E-07	8.1671E-06	4.6876E-05
5	1.3010E-03	-1.1518E-03	1.9029E-04	1.6580E-07	8.1671E-06	4.6876E-05
6	1.5120E-03	-1.1518E-03	1.8955E-04	1.6580E-07	8.1671E-06	4.6876E-05
7	1.0534E-03	-1.1511E-03	1.9104E-04	1.6580E-07	8.1671E-06	4.6876E-05
8	1.2643E-03	-1.1511E-03	1.9029E-04	1.6580E-07	8.1671E-06	4.6876E-05
9	1.4752E-03	-1.1511E-03	1.8955E-04	1.6580E-07	8.1671E-06	4.6876E-05
10	1.0166E-03	-1.1503E-03	1.9104E-04	1.6580E-07	8.1671E-06	4.6876E-05
11	1.2275E-03	-1.1503E-03	1.9029E-04	1.6580E-07	8.1671E-06	4.6876E-05
12	1.4385E-03	-1.1503E-03	1.8955E-04	1.6580E-07	8.1671E-06	4.6876E-05
13	9.7985E-04	-1.1496E-03	1.9104E-04	1.6580E-07	8.1671E-06	4.6876E-05
14	1.1908E-03	-1.1496E-03	1.9029E-04	1.6580E-07	8.1671E-06	4.6876E-05
15	1.4017E-03	-1.1496E-03	1.8955E-04	1.6580E-07	8.1671E-06	4.6876E-05
MINIMUM	9.7985E-04	-1.1526E-03	1.8955E-04	1.6580E-07	8.1671E-06	4.6876E-05

APPALTATORE:

Consorzio

Soci



ITINERARIO NAPOLI – BARI

PROGETTAZIONE:

Mandataria

Mandanti



RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

PROGETTO ESECUTIVO

RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO
IF28	01	E ZZ CL	VI0403 001	B	84 di 354

Pile N.	13	1	3	1	1	1
MAXIMUM	1.5487E-03	-1.1496E-03	1.9104E-04	1.6580E-07	8.1671E-06	4.6876E-05
Pile N.	3	13	1	1	1	1

\* PILE TOP REACTIONS \*


PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	1967.6	-278.44	45.796	0.055262	-137.13	-837.28
2	2334.0	-276.83	45.325	0.055262	-135.93	-834.04
3	2700.5	-327.97	53.483	0.055262	-152.25	-937.98
4	1903.7	-257.62	42.394	0.055262	-129.88	-792.68
5	2270.2	-256.93	42.088	0.055262	-129.02	-791.31
6	2636.7	-316.70	51.678	0.055262	-148.68	-915.45
7	1839.9	-257.00	42.322	0.055262	-129.72	-791.09
8	2206.3	-256.34	42.022	0.055262	-128.87	-789.80
9	2572.8	-316.40	51.666	0.055262	-148.66	-914.57
10	1776.0	-257.07	42.366	0.055262	-129.81	-791.01
11	2142.5	-256.42	42.066	0.055262	-128.97	-789.73
12	2509.0	-316.20	51.672	0.055262	-148.67	-913.91
13	1712.2	-275.86	45.506	0.055262	-136.51	-830.88
14	2078.6	-274.25	45.035	0.055262	-135.31	-827.62
15	2445.1	-326.12	53.339	0.055262	-151.96	-933.26
MINIMUM	1712.2	-327.97	42.022	0.055262	-152.25	-937.98
Pile N.	13	3	8	1	3	3
MAXIMUM	2700.5	-256.34	53.483	0.055262	-128.87	-789.73
Pile N.	3	8	3	1	8	11

PILE GROUP	STRESS, KN/ M**2
1	3674.0
2	3871.2
3	4396.1
4	3501.5
5	3704.4
6	4291.1
7	3460.6
8	3663.7
9	4252.3
10	3424.3
11	3627.4
12	4214.3
13	3510.1
14	3707.2
15	4237.4
MINIMUM	3424.3
Pile N.	10
MAXIMUM	4396.1
Pile N.	3

\* EFFECTS FOR Laterally LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2	KN- M**2	KN- M**2
1	-1.1526E-03	-5.5091E-06	-380.07	-137.13	-278.46	-15.683	-148.20	-3.8591	1113.4	7.8279E+06	7.8279E+06
x( M)	0.0000	9.9000	5.7600	0.0000	0.0000	7.9200	4.1400	9.0000	18.000	0.0000	0.0000
2	-1.1526E-03	-5.4995E-06	-378.41	-135.93	-276.86	-15.507	-146.78	-3.7748	1320.8	7.8279E+06	7.8279E+06
x( M)	0.0000	9.9000	5.7600	0.0000	0.0000	7.9200	4.1400	9.0000	18.000	0.0000	0.0000
3	-1.1526E-03	-5.0805E-06	-431.02	-152.25	-328.00	-19.320	-196.60	-6.0498	1528.2	7.8279E+06	7.8279E+06
x( M)	0.0000	9.3600	5.5800	0.0000	0.0000	7.5600	4.1400	9.0000	18.000	0.0000	0.0000
4	-1.1518E-03	-5.6736E-06	-358.11	-129.88	-257.64	-14.147	-129.47	-3.2265	1077.3	7.8279E+06	7.8279E+06
x( M)	0.0000	10.260	5.9400	0.0000	0.0000	8.1000	4.1400	10.620	18.000	0.0000	0.0000
5	-1.1518E-03	-5.6581E-06	-357.45	-129.02	-256.95	-14.047	-128.91	-3.2021	1284.7	7.8279E+06	7.8279E+06
x( M)	0.0000	10.260	5.9400	0.0000	0.0000	8.1000	4.1400	10.620	18.000	0.0000	0.0000
6	-1.1518E-03	-5.1619E-06	-419.65	-148.68	-316.73	-18.472	-185.34	-5.5725	1492.0	7.8279E+06	7.8279E+06
x( M)	0.0000	9.5400	5.5800	0.0000	0.0000	7.5600	4.1400	9.0000	18.000	0.0000	0.0000
7	-1.1511E-03	-5.6783E-06	-357.39	-129.72	-257.01	-14.113	-129.00	-3.2177	1041.1	7.8279E+06	7.8279E+06
x( M)	0.0000	10.260	5.9400	0.0000	0.0000	8.1000	4.1400	10.620	18.000	0.0000	0.0000
8	-1.1511E-03	-5.6623E-06	-356.76	-128.87	-256.36	-14.015	-128.48	-3.1940	1248.5	7.8279E+06	7.8279E+06
x( M)	0.0000	10.260	5.9400	0.0000	0.0000	8.1000	4.1400	10.620	18.000	0.0000	0.0000
9	-1.1511E-03	-5.1632E-06	-419.29	-148.66	-316.42	-18.465	-185.15	-5.5683	1455.9	7.8279E+06	7.8279E+06
x( M)	0.0000	9.5400	5.5800	0.0000	0.0000	7.5600	4.1400	9.0000	18.000	0.0000	0.0000
10	-1.1503E-03	-5.6763E-06	-357.42	-129.81	-257.08	-14.131	-129.15	-3.2221	1005.0	7.8279E+06	7.8279E+06
x( M)	0.0000	10.260	5.9400	0.0000	0.0000	8.1000	4.1400	10.620	18.000	0.0000	0.0000
11	-1.1503E-03	-5.6603E-06	-356.80	-128.97	-256.44	-14.033	-128.63	-3.1984	1212.4	7.8279E+06	7.8279E+06
x( M)	0.0000	10.260	5.9400	0.0000	0.0000	8.1000	4.1400	10.620	18.000	0.0000	0.0000
12	-1.1503E-03	-5.1634E-06	-419.04	-148.67	-316.22	-18.466	-185.07	-5.5690	1419.8	7.8279E+06	7.8279E+06
x( M)	0.0000	9.5400	5.5800	0.0000	0.0000	7.5600	4.1400	9.0000	18.000	0.0000	0.0000
13	-1.1496E-03	-5.5239E-06	-377.11	-136.51	-275.88	-15.543	-146.20	-3.7739	968.88	7.8279E+06	7.8279E+06
x( M)	0.0000	9.9000	5.7600	0.0000	0.0000	7.9200	4.1400	9.0000	18.000	0.0000	0.0000
14	-1.1496E-03	-5.5135E-06	-375.47	-135.31	-274.27	-15.367	-144.77	-3.6896	1176.3	7.8279E+06	7.8279E+06
x( M)	0.0000	9.9000	5.7600	0.0000	0.0000	7.9200	4.1400	9.0000	18.000	0.0000	0.0000

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   				<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   									
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>				COMMESSA <b>IF28</b>	LOTTO <b>01</b>	CODIFICA <b>E ZZ CL</b>	DOCUMENTO <b>V10403 001</b>	REV. <b>B</b>	FOGLIO <b>85 di 354</b>

15	-1.1496E-03	-5.0894E-06	-428.99	-151.96	-326.15	-19.247	-195.20	-6.0082	1383.6	7.8279E+06	7.8279E+06
x( M)	0.0000	9.3600	5.5800	0.0000	0.0000	7.5600	4.1400	9.0000	18.000	0.0000	0.0000
Min. Pile N.	-1.1526E-03	-5.6783E-06	-431.02	-152.25	-328.00	-19.320	-196.60	-6.0498	968.88	7.8279E+06	7.8279E+06
	1	7	3	3	3	3	3	3	13	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-Dir M	DISPL. z-Dir M	MOMENT z-Dir KN- M	MOMENT y-Dir KN- M	SHEAR y-Dir KN	SHEAR z-Dir KN	SOIL REACT y-Dir KN/ M	SOIL REACT z-Dir KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-Dir KN- M**2	FLEX. RIG. y-Dir KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	3.3312E-05	1.9104E-04	837.28	62.870	94.825	45.799	23.268	24.444	3674.0	7.8279E+06	7.8279E+06
x( M)	9.9000	0.0000	0.0000	5.7600	7.9200	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
2	3.3388E-05	1.9029E-04	834.04	62.342	94.144	45.328	22.846	24.104	3871.2	7.8279E+06	7.8279E+06
x( M)	9.9000	0.0000	0.0000	5.7600	7.9200	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
3	3.0979E-05	1.8955E-04	937.98	70.703	117.80	53.488	36.856	32.151	4396.1	7.8279E+06	7.8279E+06
x( M)	9.3600	0.0000	0.0000	5.5800	7.5600	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
4	3.4286E-05	1.9104E-04	792.68	59.273	85.479	42.397	19.509	21.368	3501.5	7.8279E+06	7.8279E+06
x( M)	10.260	0.0000	0.0000	5.9400	8.1000	0.0000	10.620	4.1400	0.0000	0.0000	0.0000
5	3.4332E-05	1.9029E-04	791.31	58.923	85.217	42.091	19.441	21.184	3704.4	7.8279E+06	7.8279E+06
x( M)	10.260	0.0000	0.0000	5.9400	8.1000	0.0000	10.620	4.1400	0.0000	0.0000	0.0000
6	3.1458E-05	1.8955E-04	915.45	68.892	112.53	51.682	33.913	30.331	4291.1	7.8279E+06	7.8279E+06
x( M)	9.5400	0.0000	0.0000	5.5800	7.5600	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
7	3.4290E-05	1.9104E-04	791.09	59.193	85.214	42.325	19.442	21.306	3460.6	7.8279E+06	7.8279E+06
x( M)	10.260	0.0000	0.0000	5.9400	8.1000	0.0000	10.620	4.1400	0.0000	0.0000	0.0000
8	3.4334E-05	1.9029E-04	789.80	58.850	84.969	42.026	19.379	21.128	3663.7	7.8279E+06	7.8279E+06
x( M)	10.260	0.0000	0.0000	5.9400	8.1000	0.0000	10.620	4.1400	0.0000	0.0000	0.0000
9	3.1444E-05	1.8955E-04	914.57	68.879	112.41	51.670	33.864	30.321	4252.3	7.8279E+06	7.8279E+06
x( M)	9.5400	0.0000	0.0000	5.5800	7.5600	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
10	3.4255E-05	1.9104E-04	791.01	59.240	85.265	42.369	19.456	21.346	3424.3	7.8279E+06	7.8279E+06
x( M)	10.260	0.0000	0.0000	5.9400	8.1000	0.0000	10.620	4.1400	0.0000	0.0000	0.0000
11	3.4298E-05	1.9029E-04	789.73	58.896	85.020	42.070	19.392	21.168	3627.4	7.8279E+06	7.8279E+06
x( M)	10.260	0.0000	0.0000	5.9400	8.1000	0.0000	10.620	4.1400	0.0000	0.0000	0.0000
12	3.1424E-05	1.8955E-04	913.91	68.885	112.34	51.676	33.846	30.330	4214.3	7.8279E+06	7.8279E+06
x( M)	9.5400	0.0000	0.0000	5.5800	7.5600	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
13	3.3309E-05	1.9104E-04	830.88	62.549	93.725	45.509	22.694	24.182	3510.1	7.8279E+06	7.8279E+06
x( M)	9.9000	0.0000	0.0000	5.7600	7.9200	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
14	3.3382E-05	1.9029E-04	827.62	62.019	93.037	45.038	22.270	23.843	3707.2	7.8279E+06	7.8279E+06
x( M)	9.9000	0.0000	0.0000	5.7600	7.9200	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
15	3.0948E-05	1.8955E-04	933.26	70.561	117.04	53.343	36.504	32.014	4237.4	7.8279E+06	7.8279E+06
x( M)	9.3600	0.0000	0.0000	5.5800	7.5600	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
Max. Pile N.	3.4334E-05	1.9104E-04	937.98	70.703	117.80	53.488	36.856	32.151	4396.1	7.8279E+06	7.8279E+06
	8	1	3	3	3	3	3	3	3	1	1

LOAD CASE : 5  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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	0.5953	1.0000
2	0.5875	1.0000
3	0.8661	1.0000
4	0.4983	1.0000
5	0.4951	1.0000
6	0.7992	1.0000
7	0.4961	1.0000
8	0.4931	1.0000
9	0.7984	1.0000
10	0.4971	1.0000
11	0.4941	1.0000
12	0.7984	1.0000
13	0.5845	1.0000
14	0.5767	1.0000
15	0.8587	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
28827.0	-2914.56	498.587
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-49.6459	4534.33	-1014.09

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>							

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL , M 1.10053E-03	HORIZONTAL Y, M -7.21561E-04	HORIZONTAL Z, M 1.29537E-04
ANGLE ROT. X,RAD 2.52977E-07	ANGLE ROT. Y, RAD 5.68336E-06	ANGLE ROT. Z, RAD 2.20568E-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	1.0524E-03	-7.2384E-04	1.3067E-04	2.5298E-07	5.6834E-06	2.2057E-05
2	1.1517E-03	-7.2384E-04	1.2954E-04	2.5298E-07	5.6834E-06	2.2057E-05
3	1.2509E-03	-7.2384E-04	1.2840E-04	2.5298E-07	5.6834E-06	2.2057E-05
4	1.0268E-03	-7.2270E-04	1.3067E-04	2.5298E-07	5.6834E-06	2.2057E-05
5	1.1261E-03	-7.2270E-04	1.2954E-04	2.5298E-07	5.6834E-06	2.2057E-05
6	1.2254E-03	-7.2270E-04	1.2840E-04	2.5298E-07	5.6834E-06	2.2057E-05
7	1.0013E-03	-7.2156E-04	1.3067E-04	2.5298E-07	5.6834E-06	2.2057E-05
8	1.1005E-03	-7.2156E-04	1.2954E-04	2.5298E-07	5.6834E-06	2.2057E-05
9	1.1998E-03	-7.2156E-04	1.2840E-04	2.5298E-07	5.6834E-06	2.2057E-05
10	9.7570E-04	-7.2042E-04	1.3067E-04	2.5298E-07	5.6834E-06	2.2057E-05
11	1.0750E-03	-7.2042E-04	1.2954E-04	2.5298E-07	5.6834E-06	2.2057E-05
12	1.1742E-03	-7.2042E-04	1.2840E-04	2.5298E-07	5.6834E-06	2.2057E-05
13	9.5012E-04	-7.1928E-04	1.3067E-04	2.5298E-07	5.6834E-06	2.2057E-05
14	1.0494E-03	-7.1928E-04	1.2954E-04	2.5298E-07	5.6834E-06	2.2057E-05
15	1.1486E-03	-7.1928E-04	1.2840E-04	2.5298E-07	5.6834E-06	2.2057E-05
MINIMUM	9.5012E-04	-7.2384E-04	1.2840E-04	2.5298E-07	5.6834E-06	2.2057E-05
PILE N.	13	1	3	1	1	1
MAXIMUM	1.2509E-03	-7.1928E-04	1.3067E-04	2.5298E-07	5.6834E-06	2.2057E-05
PILE N.	3	13	1	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
1	1838.2	-191.66	33.015	0.084317	-97.627	-580.83
2	2010.7	-190.57	32.492	0.084317	-96.177	-578.58
3	2183.1	-224.26	37.956	0.084317	-106.83	-646.94
4	1793.8	-177.45	30.581	0.084317	-92.471	-550.27
5	1966.2	-176.96	30.184	0.084317	-91.280	-549.22
6	2138.7	-216.53	36.690	0.084317	-104.34	-631.28
7	1749.4	-176.84	30.529	0.084317	-92.357	-548.60
8	1921.8	-176.37	30.137	0.084317	-91.178	-547.63
9	2094.2	-216.11	36.683	0.084317	-104.33	-630.05
10	1704.9	-176.73	30.563	0.084317	-92.429	-548.01
11	1877.4	-176.26	30.171	0.084317	-91.250	-547.03
12	2049.8	-215.78	36.691	0.084317	-104.35	-629.00
13	1660.5	-189.02	32.784	0.084317	-97.145	-573.85
14	1832.9	-187.93	32.262	0.084317	-95.696	-571.59
15	2005.4	-222.09	37.849	0.084317	-106.63	-641.05
MINIMUM	1660.5	-224.26	30.137	0.084317	-106.83	-646.94
PILE N.	13	3	8	1	3	3
MAXIMUM	2183.1	-176.26	37.956	0.084317	-91.178	-547.03
PILE N.	3	11	3	1	8	11

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
1	1.0524E-03	-7.2384E-04	1.3067E-04	2.5298E-07	5.6834E-06	2.2057E-05
2	1.1517E-03	-7.2384E-04	1.2954E-04	2.5298E-07	5.6834E-06	2.2057E-05
3	1.2509E-03	-7.2384E-04	1.2840E-04	2.5298E-07	5.6834E-06	2.2057E-05
4	1.0268E-03	-7.2270E-04	1.3067E-04	2.5298E-07	5.6834E-06	2.2057E-05
5	1.1261E-03	-7.2270E-04	1.2954E-04	2.5298E-07	5.6834E-06	2.2057E-05
6	1.2254E-03	-7.2270E-04	1.2840E-04	2.5298E-07	5.6834E-06	2.2057E-05
7	1.0013E-03	-7.2156E-04	1.3067E-04	2.5298E-07	5.6834E-06	2.2057E-05
8	1.1005E-03	-7.2156E-04	1.2954E-04	2.5298E-07	5.6834E-06	2.2057E-05
9	1.1998E-03	-7.2156E-04	1.2840E-04	2.5298E-07	5.6834E-06	2.2057E-05
10	9.7570E-04	-7.2042E-04	1.3067E-04	2.5298E-07	5.6834E-06	2.2057E-05
11	1.0750E-03	-7.2042E-04	1.2954E-04	2.5298E-07	5.6834E-06	2.2057E-05
12	1.1742E-03	-7.2042E-04	1.2840E-04	2.5298E-07	5.6834E-06	2.2057E-05
13	9.5012E-04	-7.1928E-04	1.3067E-04	2.5298E-07	5.6834E-06	2.2057E-05
14	1.0494E-03	-7.1928E-04	1.2954E-04	2.5298E-07	5.6834E-06	2.2057E-05
15	1.1486E-03	-7.1928E-04	1.2840E-04	2.5298E-07	5.6834E-06	2.2057E-05
MINIMUM	9.5012E-04	-7.2384E-04	1.2840E-04	2.5298E-07	5.6834E-06	2.2057E-05

APPALTATORE:

Consorzio

Soci



ITINERARIO NAPOLI – BARI

PROGETTAZIONE:

Mandataria

Mandanti



RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

PROGETTO ESECUTIVO

RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO
IF28	01	E ZZ CL	VI0403 001	B	87 di 354

Pile N.	13	1	3	1	1	1
MAXIMUM	1.2509E-03	-7.1928E-04	1.3067E-04	2.5298E-07	5.6834E-06	2.2057E-05
Pile N.	3	13	1	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	1838.2	-191.66	33.015	0.084317	-97.627	-580.83
2	2010.7	-190.57	32.492	0.084317	-96.177	-578.58
3	2183.1	-224.26	37.956	0.084317	-106.83	-646.94
4	1793.8	-177.45	30.581	0.084317	-92.471	-550.27
5	1966.2	-176.96	30.184	0.084317	-91.280	-549.22
6	2138.7	-216.53	36.690	0.084317	-104.34	-631.28
7	1749.4	-176.84	30.529	0.084317	-92.357	-548.60
8	1921.8	-176.37	30.137	0.084317	-91.178	-547.63
9	2094.2	-216.11	36.683	0.084317	-104.33	-630.05
10	1704.9	-176.73	30.563	0.084317	-92.429	-548.01
11	1877.4	-176.26	30.171	0.084317	-91.250	-547.03
12	2049.8	-215.78	36.691	0.084317	-104.35	-629.00
13	1660.5	-189.02	32.784	0.084317	-97.145	-573.85
14	1832.9	-187.93	32.262	0.084317	-95.696	-571.59
15	2005.4	-222.09	37.849	0.084317	-106.63	-641.05
MINIMUM	1660.5	-224.26	30.137	0.084317	-106.83	-646.94
Pile N.	13	3	8	1	3	3
MAXIMUM	2183.1	-176.26	37.956	0.084317	-91.178	-547.03
Pile N.	3	11	3	1	8	11

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

1	2817.8
2	2908.0
3	3214.3
4	2699.1
5	2793.0
6	3141.3
7	2669.0
8	2763.0
9	3112.5
10	2642.1
11	2736.2
12	3084.2
13	2696.2
14	2786.3
15	3096.1
MINIMUM	2642.1
Pile N.	10
MAXIMUM	3214.3
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	-7.2384E-04	-3.9411E-06	-253.41	-97.627	-191.67	-11.272	-114.46	-2.9834	1040.2	7.8279E+06	7.8279E+06
x( M)	0.0000	9.7200	5.7600	0.0000	0.0000	7.7400	4.1400	9.0000	18.000	0.0000	0.0000
2	-7.2384E-04	-3.9138E-06	-252.28	-96.177	-190.58	-11.083	-113.34	-2.9073	1137.8	7.8279E+06	7.8279E+06
x( M)	0.0000	9.7200	5.7600	0.0000	0.0000	7.7400	4.1400	9.0000	18.000	0.0000	0.0000
3	-7.2384E-04	-3.6161E-06	-288.82	-106.83	-224.28	-13.813	-150.66	-4.3987	1235.4	7.8279E+06	7.8279E+06
x( M)	0.0000	9.1800	5.4000	0.0000	0.0000	7.3800	4.1400	9.0000	18.000	0.0000	0.0000
4	-7.2270E-04	-4.0519E-06	-237.63	-92.471	-177.47	-10.125	-100.07	-2.3205	1015.1	7.8279E+06	7.8279E+06
x( M)	0.0000	10.080	5.7600	0.0000	0.0000	7.9200	4.1400	9.0000	18.000	0.0000	0.0000
5	-7.2270E-04	-4.0202E-06	-237.08	-91.280	-176.97	-9.9956	-99.599	-2.2786	1112.7	7.8279E+06	7.8279E+06
x( M)	0.0000	10.080	5.7600	0.0000	0.0000	7.9200	4.1400	9.0000	18.000	0.0000	0.0000
6	-7.2270E-04	-3.6706E-06	-280.35	-104.34	-216.55	-13.185	-142.01	-4.0810	1210.2	7.8279E+06	7.8279E+06
x( M)	0.0000	9.3600	5.4000	0.0000	0.0000	7.3800	4.1400	9.0000	18.000	0.0000	0.0000
7	-7.2156E-04	-4.0555E-06	-236.89	-92.357	-176.85	-10.099	-99.636	-2.3052	989.94	7.8279E+06	7.8279E+06
x( M)	0.0000	10.080	5.7600	0.0000	0.0000	7.9200	4.1400	9.0000	18.000	0.0000	0.0000
8	-7.2156E-04	-4.0235E-06	-236.37	-91.178	-176.39	-9.9716	-99.191	-2.2648	1087.5	7.8279E+06	7.8279E+06
x( M)	0.0000	10.080	5.7600	0.0000	0.0000	7.9200	4.1400	9.0000	18.000	0.0000	0.0000
9	-7.2156E-04	-3.6718E-06	-279.85	-104.33	-216.13	-13.179	-141.77	-4.0781	1185.1	7.8279E+06	7.8279E+06
x( M)	0.0000	9.3600	5.4000	0.0000	0.0000	7.3800	4.1400	9.0000	18.000	0.0000	0.0000
10	-7.2042E-04	-4.0544E-06	-236.72	-92.429	-176.74	-10.113	-99.691	-2.3134	964.79	7.8279E+06	7.8279E+06
x( M)	0.0000	10.080	5.7600	0.0000	0.0000	7.9200	4.1400	9.0000	18.000	0.0000	0.0000
11	-7.2042E-04	-4.0224E-06	-236.20	-91.250	-176.27	-9.9853	-99.246	-2.2730	1062.4	7.8279E+06	7.8279E+06
x( M)	0.0000	10.080	5.7600	0.0000	0.0000	7.9200	4.1400	9.0000	18.000	0.0000	0.0000
12	-7.2042E-04	-3.6722E-06	-279.45	-104.35	-215.80	-13.181	-141.63	-4.0789	1160.0	7.8279E+06	7.8279E+06
x( M)	0.0000	9.3600	5.4000	0.0000	0.0000	7.3800	4.1400	9.0000	18.000	0.0000	0.0000
13	-7.1928E-04	-3.9538E-06	-250.34	-97.145	-189.03	-11.155	-112.46	-2.9166	939.65	7.8279E+06	7.8279E+06
x( M)	0.0000	9.7200	5.7600	0.0000	0.0000	7.7400	4.1400	9.0000	18.000	0.0000	0.0000
14	-7.1928E-04	-3.9259E-06	-249.19	-95.696	-187.94	-10.965	-111.34	-2.8406	1037.2	7.8279E+06	7.8279E+06
x( M)	0.0000	9.7200	5.7600	0.0000	0.0000	7.7400	4.1400	9.0000	18.000	0.0000	0.0000

APPALTATORE:

Consorzio

Soci



ITINERARIO NAPOLI – BARI

PROGETTAZIONE:

Mandataria

Mandanti



RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

PROGETTO ESECUTIVO

RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO
IF28	01	E ZZ CL	V10403 001	B	88 di 354

15	-7.1928E-04	-3.6241E-06	-286.31	-106.63	-222.10	-13.754	-149.12	-4.3679	1134.8	7.8279E+06	7.8279E+06
x( M)	0.0000	9.1800	5.4000	0.0000	0.0000	7.3800	4.1400	9.0000	18.000	0.0000	0.0000
Min. Pile N.	-7.2384E-04	-4.0555E-06	-288.82	-106.83	-224.28	-13.813	-150.66	-4.3987	939.65	7.8279E+06	7.8279E+06
	1	7	3	3	3	3	3	3	13	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2	KN- M**2	KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	2.2118E-05	1.3068E-04	580.83	45.200	63.246	33.017	16.542	20.047	2817.8	7.8279E+06	7.8279E+06
x( M)	9.7200	0.0000	0.0000	5.5800	7.7400	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
2	2.2160E-05	1.2954E-04	578.58	44.577	62.739	32.494	16.253	19.660	2908.0	7.8279E+06	7.8279E+06
x( M)	9.7200	0.0000	0.0000	5.5800	7.7400	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
3	2.0692E-05	1.2840E-04	646.94	50.534	79.022	37.959	25.113	25.900	3214.3	7.8279E+06	7.8279E+06
x( M)	9.1800	0.0000	0.0000	5.4000	7.3800	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
4	2.2710E-05	1.3068E-04	550.27	42.452	56.686	30.583	12.750	17.551	2699.1	7.8279E+06	7.8279E+06
x( M)	10.080	0.0000	0.0000	5.7600	7.9200	0.0000	10.440	4.1400	0.0000	0.0000	0.0000
5	2.2737E-05	1.2954E-04	549.22	41.973	56.466	30.186	12.696	17.299	2793.0	7.8279E+06	7.8279E+06
x( M)	10.080	0.0000	0.0000	5.7600	7.9200	0.0000	10.440	4.1400	0.0000	0.0000	0.0000
6	2.0982E-05	1.2840E-04	631.28	49.166	75.220	36.693	23.219	24.451	3141.3	7.8279E+06	7.8279E+06
x( M)	9.3600	0.0000	0.0000	5.4000	7.3800	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
7	2.2692E-05	1.3068E-04	548.60	42.390	56.442	30.531	12.691	17.503	2669.0	7.8279E+06	7.8279E+06
x( M)	10.080	0.0000	0.0000	5.7600	7.9200	0.0000	10.440	4.1400	0.0000	0.0000	0.0000
8	2.2716E-05	1.2954E-04	547.63	41.916	56.235	30.139	12.639	17.257	2763.0	7.8279E+06	7.8279E+06
x( M)	10.080	0.0000	0.0000	5.7600	7.9200	0.0000	10.440	4.1400	0.0000	0.0000	0.0000
9	2.0955E-05	1.2840E-04	630.05	49.159	75.066	36.686	23.164	24.450	3112.5	7.8279E+06	7.8279E+06
x( M)	9.3600	0.0000	0.0000	5.4000	7.3800	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
10	2.2650E-05	1.3068E-04	548.01	42.427	56.429	30.564	12.689	17.543	2642.1	7.8279E+06	7.8279E+06
x( M)	10.080	0.0000	0.0000	5.7600	7.9200	0.0000	10.440	4.1400	0.0000	0.0000	0.0000
11	2.2675E-05	1.2954E-04	547.03	41.953	56.224	30.173	12.637	17.296	2736.2	7.8279E+06	7.8279E+06
x( M)	10.080	0.0000	0.0000	5.7600	7.9200	0.0000	10.440	4.1400	0.0000	0.0000	0.0000
12	2.0923E-05	1.2840E-04	629.00	49.168	74.956	36.693	23.131	24.466	3084.2	7.8279E+06	7.8279E+06
x( M)	9.3600	0.0000	0.0000	5.4000	7.3800	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
13	2.2037E-05	1.3068E-04	573.85	44.929	62.165	32.786	16.058	19.829	2696.2	7.8279E+06	7.8279E+06
x( M)	9.7200	0.0000	0.0000	5.5800	7.7400	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
14	2.2088E-05	1.2954E-04	571.59	44.305	61.654	32.264	15.768	19.443	2786.3	7.8279E+06	7.8279E+06
x( M)	9.9000	0.0000	0.0000	5.5800	7.7400	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
15	2.0600E-05	1.2840E-04	641.05	50.424	78.165	37.852	24.772	25.809	3096.1	7.8279E+06	7.8279E+06
x( M)	9.1800	0.0000	0.0000	5.4000	7.3800	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
Max. Pile N.	2.2737E-05	1.3068E-04	646.94	50.534	79.022	37.959	25.113	25.900	3214.3	7.8279E+06	7.8279E+06
	5	1	3	3	3	3	3	3	3	1	1

LOAD CASE : 6  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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	0.6244	1.0000
2	0.6101	1.0000
3	0.8661	1.0000
4	0.5061	1.0000
5	0.4952	1.0000
6	0.7820	1.0000
7	0.5006	1.0000
8	0.4904	1.0000
9	0.7791	1.0000
10	0.5015	1.0000
11	0.4914	1.0000
12	0.7791	1.0000
13	0.5845	1.0000
14	0.5700	1.0000
15	0.8378	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
33358.9	-2177.94	696.757
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-111.124	6548.49	-5604.80



<b>APPALTATORE:</b> Consorzio <b>Soci</b>   		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>							

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL , M 1.27443E-03	HORIZONTAL Y, M -4.83544E-04	HORIZONTAL Z, M 1.76828E-04
ANGLE ROT. X,RAD -9.27703E-08	ANGLE ROT. Y,RAD 8.12261E-06	ANGLE ROT. Z,RAD 3.28500E-06

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

PILE GROUP *****	DISP. X, M *****	DISP. Y, M *****	DISP. Z, M *****	ROT. X,RAD *****	ROT. Y,RAD *****	ROT. Z,RAD *****
1	1.3327E-03	-4.8271E-04	1.7641E-04	-9.2770E-08	8.1226E-06	3.2850E-06
2	1.3475E-03	-4.8271E-04	1.7683E-04	-9.2770E-08	8.1226E-06	3.2850E-06
3	1.3623E-03	-4.8271E-04	1.7725E-04	-9.2770E-08	8.1226E-06	3.2850E-06
4	1.2962E-03	-4.8313E-04	1.7641E-04	-9.2770E-08	8.1226E-06	3.2850E-06
5	1.3110E-03	-4.8313E-04	1.7683E-04	-9.2770E-08	8.1226E-06	3.2850E-06
6	1.3258E-03	-4.8313E-04	1.7725E-04	-9.2770E-08	8.1226E-06	3.2850E-06
7	1.2596E-03	-4.8354E-04	1.7641E-04	-9.2770E-08	8.1226E-06	3.2850E-06
8	1.2744E-03	-4.8354E-04	1.7683E-04	-9.2770E-08	8.1226E-06	3.2850E-06
9	1.2892E-03	-4.8354E-04	1.7725E-04	-9.2770E-08	8.1226E-06	3.2850E-06
10	1.2231E-03	-4.8396E-04	1.7641E-04	-9.2770E-08	8.1226E-06	3.2850E-06
11	1.2379E-03	-4.8396E-04	1.7683E-04	-9.2770E-08	8.1226E-06	3.2850E-06
12	1.2527E-03	-4.8396E-04	1.7725E-04	-9.2770E-08	8.1226E-06	3.2850E-06
13	1.1865E-03	-4.8438E-04	1.7641E-04	-9.2770E-08	8.1226E-06	3.2850E-06
14	1.2013E-03	-4.8438E-04	1.7683E-04	-9.2770E-08	8.1226E-06	3.2850E-06
15	1.2161E-03	-4.8438E-04	1.7725E-04	-9.2770E-08	8.1226E-06	3.2850E-06
MINIMUM	1.1865E-03	-4.8438E-04	1.7641E-04	-9.2770E-08	8.1226E-06	3.2850E-06
Pile N.	13	13	1	1	1	1
MAXIMUM	1.3623E-03	-4.8271E-04	1.7725E-04	-9.2770E-08	8.1226E-06	3.2850E-06
Pile N.	3	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP *****	FOR. X, KN *****	FOR. Y, KN *****	FOR. Z, KN *****	MOM X, KN- M *****	MOM Y, KN- M *****	MOM Z, KN- M *****
1	2325.3	-145.49	46.491	-0.030920	-135.07	-451.54
2	2350.9	-144.12	46.160	-0.030920	-134.53	-448.68
3	2376.6	-166.06	53.696	-0.030920	-149.80	-493.21
4	2261.7	-133.60	42.476	-0.030920	-126.63	-426.42
5	2287.4	-132.41	42.194	-0.030920	-126.16	-423.83
6	2313.1	-159.51	51.433	-0.030920	-145.35	-480.34
7	2198.2	-133.12	42.275	-0.030920	-126.20	-425.49
8	2223.9	-131.99	42.015	-0.030920	-125.77	-423.04
9	2249.6	-159.40	51.349	-0.030920	-145.18	-480.26
10	2134.7	-133.33	42.308	-0.030920	-126.27	-426.07
11	2160.4	-132.21	42.049	-0.030920	-125.84	-423.63
12	2186.1	-159.54	51.348	-0.030920	-145.17	-480.67
13	2071.2	-142.11	45.192	-0.030920	-132.36	-444.94
14	2096.9	-140.64	44.827	-0.030920	-131.73	-441.85
15	2122.6	-164.42	52.945	-0.030920	-148.32	-490.53
MINIMUM	2071.2	-166.06	42.015	-0.030920	-149.80	-493.21
Pile N.	13	3	8	1	3	3
MAXIMUM	2376.6	-131.99	53.696	-0.030920	-125.77	-423.04
Pile N.	3	8	3	1	8	8

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

PILE GROUP *****	DISP. x, M *****	DISP. y, M *****	DISP. z, M *****	ROT. x,RAD *****	ROT. y,RAD *****	ROT. z,RAD *****
1	1.3327E-03	-4.8271E-04	1.7641E-04	-9.2770E-08	8.1226E-06	3.2850E-06
2	1.3475E-03	-4.8271E-04	1.7683E-04	-9.2770E-08	8.1226E-06	3.2850E-06
3	1.3623E-03	-4.8271E-04	1.7725E-04	-9.2770E-08	8.1226E-06	3.2850E-06
4	1.2962E-03	-4.8313E-04	1.7641E-04	-9.2770E-08	8.1226E-06	3.2850E-06
5	1.3110E-03	-4.8313E-04	1.7683E-04	-9.2770E-08	8.1226E-06	3.2850E-06
6	1.3258E-03	-4.8313E-04	1.7725E-04	-9.2770E-08	8.1226E-06	3.2850E-06
7	1.2596E-03	-4.8354E-04	1.7641E-04	-9.2770E-08	8.1226E-06	3.2850E-06
8	1.2744E-03	-4.8354E-04	1.7683E-04	-9.2770E-08	8.1226E-06	3.2850E-06
9	1.2892E-03	-4.8354E-04	1.7725E-04	-9.2770E-08	8.1226E-06	3.2850E-06
10	1.2231E-03	-4.8396E-04	1.7641E-04	-9.2770E-08	8.1226E-06	3.2850E-06
11	1.2379E-03	-4.8396E-04	1.7683E-04	-9.2770E-08	8.1226E-06	3.2850E-06
12	1.2527E-03	-4.8396E-04	1.7725E-04	-9.2770E-08	8.1226E-06	3.2850E-06
13	1.1865E-03	-4.8438E-04	1.7641E-04	-9.2770E-08	8.1226E-06	3.2850E-06
14	1.2013E-03	-4.8438E-04	1.7683E-04	-9.2770E-08	8.1226E-06	3.2850E-06
15	1.2161E-03	-4.8438E-04	1.7725E-04	-9.2770E-08	8.1226E-06	3.2850E-06
MINIMUM	1.1865E-03	-4.8438E-04	1.7641E-04	-9.2770E-08	8.1226E-06	3.2850E-06

APPALTATORE:

Consorzio

Soci



ITINERARIO NAPOLI – BARI

PROGETTAZIONE:

Mandataria

Mandanti



RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

PROGETTO ESECUTIVO

RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO
IF28	01	E ZZ CL	VI0403 001	B	90 di 354

Pile N.	13	13	1	1	1	1
MAXIMUM	1.3623E-03	-4.8271E-04	1.7725E-04	-9.2770E-08	8.1226E-06	3.2850E-06
Pile N.	3	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	2325.3	-145.49	46.491	-0.030920	-135.07	-451.54
2	2350.9	-144.12	46.160	-0.030920	-134.53	-448.68
3	2376.6	-166.06	53.696	-0.030920	-149.80	-493.21
4	2261.7	-133.60	42.476	-0.030920	-126.63	-426.42
5	2287.4	-132.41	42.194	-0.030920	-126.16	-423.83
6	2313.1	-159.51	51.433	-0.030920	-145.35	-480.34
7	2198.2	-133.12	42.275	-0.030920	-126.20	-425.49
8	2223.9	-131.99	42.015	-0.030920	-125.77	-423.04
9	2249.6	-159.40	51.349	-0.030920	-145.18	-480.26
10	2134.7	-133.33	42.308	-0.030920	-126.27	-426.07
11	2160.4	-132.21	42.049	-0.030920	-125.84	-423.63
12	2186.1	-159.54	51.348	-0.030920	-145.17	-480.67
13	2071.2	-142.11	45.192	-0.030920	-132.36	-444.94
14	2096.9	-140.64	44.827	-0.030920	-131.73	-441.85
15	2122.6	-164.42	52.945	-0.030920	-148.32	-490.53
MINIMUM	2071.2	-166.06	42.015	-0.030920	-149.80	-493.21
Pile N.	13	3	8	1	3	3
MAXIMUM	2376.6	-131.99	53.696	-0.030920	-125.77	-423.04
Pile N.	3	8	3	1	8	8

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

1	2738.2
2	2744.1
3	2900.6
4	2622.4
5	2629.0
6	2823.6
7	2583.4
8	2590.5
9	2787.3
10	2549.2
11	2556.3
12	2752.5
13	2573.1
14	2578.1
15	2747.8
MINIMUM	2549.2
Pile N.	10
MAXIMUM	2900.6
Pile N.	3

\* EFFECTS FOR Laterally LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2	KN- M**2	KN- M**2
1	-4.8271E-04	-5.3739E-06	-179.84	-135.07	-145.50	-15.971	-95.377	-4.4655	1315.8	7.8279E+06	7.8279E+06
x( M)	0.0000	9.5400	5.5800	0.0000	0.0000	7.5600	4.1400	9.0000	18.000	0.0000	0.0000
2	-4.8271E-04	-5.4047E-06	-178.30	-134.53	-144.13	-15.784	-93.774	-4.3561	1330.4	7.8279E+06	7.8279E+06
x( M)	0.0000	9.5400	5.5800	0.0000	0.0000	7.5600	4.1400	9.0000	18.000	0.0000	0.0000
3	-4.8271E-04	-5.0913E-06	-202.24	-149.80	-166.07	-19.519	-120.60	-6.2310	1344.9	7.8279E+06	7.8279E+06
x( M)	0.0000	9.0000	5.4000	0.0000	0.0000	7.2000	4.1400	9.0000	18.000	0.0000	0.0000
4	-4.8313E-04	-5.5526E-06	-166.62	-126.63	-133.61	-14.037	-81.777	-3.4029	1279.9	7.8279E+06	7.8279E+06
x( M)	0.0000	9.9000	5.7600	0.0000	0.0000	7.7400	4.1400	9.0000	18.000	0.0000	0.0000
5	-4.8313E-04	-5.5832E-06	-165.26	-126.16	-132.42	-13.880	-80.460	-3.3051	1294.4	7.8279E+06	7.8279E+06
x( M)	0.0000	9.9000	5.7600	0.0000	0.0000	7.9200	4.1400	9.0000	18.000	0.0000	0.0000
6	-4.8313E-04	-5.1925E-06	-195.12	-145.35	-159.52	-18.371	-112.22	-5.6844	1309.0	7.8279E+06	7.8279E+06
x( M)	0.0000	9.1800	5.4000	0.0000	0.0000	7.3800	4.1400	9.0000	18.000	0.0000	0.0000
7	-4.8354E-04	-5.5609E-06	-166.08	-126.20	-133.13	-13.938	-81.163	-3.3495	1244.0	7.8279E+06	7.8279E+06
x( M)	0.0000	9.9000	5.7600	0.0000	0.0000	7.7400	4.1400	9.0000	18.000	0.0000	0.0000
8	-4.8354E-04	-5.5896E-06	-164.79	-125.77	-132.00	-13.800	-79.923	-3.2576	1258.5	7.8279E+06	7.8279E+06
x( M)	0.0000	9.9000	5.7600	0.0000	0.0000	7.9200	4.1400	9.0000	18.000	0.0000	0.0000
9	-4.8354E-04	-5.1951E-06	-195.01	-145.18	-159.42	-18.329	-111.98	-5.6636	1273.0	7.8279E+06	7.8279E+06
x( M)	0.0000	9.1800	5.4000	0.0000	0.0000	7.3800	4.1400	9.0000	18.000	0.0000	0.0000
10	-4.8396E-04	-5.5590E-06	-166.33	-126.27	-133.34	-13.953	-81.316	-3.3578	1208.0	7.8279E+06	7.8279E+06
x( M)	0.0000	9.9000	5.7600	0.0000	0.0000	7.7400	4.1400	9.0000	18.000	0.0000	0.0000
11	-4.8396E-04	-5.5878E-06	-165.05	-125.84	-132.22	-13.814	-80.078	-3.2662	1222.6	7.8279E+06	7.8279E+06
x( M)	0.0000	9.9000	5.7600	0.0000	0.0000	7.9200	4.1400	9.0000	18.000	0.0000	0.0000
12	-4.8396E-04	-5.1947E-06	-195.17	-145.17	-159.55	-18.328	-112.04	-5.6631	1237.1	7.8279E+06	7.8279E+06
x( M)	0.0000	9.1800	5.4000	0.0000	0.0000	7.3800	4.1400	9.0000	18.000	0.0000	0.0000
13	-4.8438E-04	-5.4283E-06	-176.01	-132.36	-142.12	-15.320	-91.083	-4.1226	1172.1	7.8279E+06	7.8279E+06
x( M)	0.0000	9.7200	5.5800	0.0000	0.0000	7.5600	4.1400	9.0000	18.000	0.0000	0.0000
14	-4.8438E-04	-5.4654E-06	-174.38	-131.73	-140.65	-15.133	-89.401	-4.0032	1186.6	7.8279E+06	7.8279E+06
x( M)	0.0000	9.7200	5.7600	0.0000	0.0000	7.7400	4.1400	9.0000	18.000	0.0000	0.0000

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   		
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>		

15	-4.8438E-04	-5.1261E-06	-200.54	-148.32	-164.43	-19.121	-118.05	-6.0519	1201.1	7.8279E+06	7.8279E+06
x( M)	0.0000	9.1800	5.4000	0.0000	0.0000	7.2000	4.1400	9.0000	18.000	0.0000	0.0000
Min. Pile N.	-4.8438E-04	-5.5896E-06	-202.24	-149.80	-166.07	-19.519	-120.60	-6.2310	1172.1	7.8279E+06	7.8279E+06
	13	8	3	3	3	3	3	3	13	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-Dir	DISPL. z-Dir	MOMENT z-Dir	MOMENT y-Dir	SHEAR y-Dir	SHEAR z-Dir	SOIL REACT y-Dir	SOIL REACT z-Dir	TOTAL STRESS	FLEX. RIG. z-Dir	FLEX. RIG. y-Dir
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2	KN- M**2	KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	1.5295E-05	1.7641E-04	451.54	63.290	45.359	46.494	12.374	31.897	2738.2	7.8279E+06	7.8279E+06
x( M)	9.7200	0.0000	0.0000	5.5800	7.7400	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
2	1.5356E-05	1.7683E-04	448.68	62.940	44.741	46.164	12.013	31.440	2744.1	7.8279E+06	7.8279E+06
x( M)	9.7200	0.0000	0.0000	5.5800	7.7400	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
3	1.4468E-05	1.7725E-04	493.21	71.410	55.270	53.700	17.611	40.618	2900.6	7.8279E+06	7.8279E+06
x( M)	9.1800	0.0000	0.0000	5.2200	7.3800	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
4	1.5786E-05	1.7641E-04	426.42	58.662	39.907	42.479	9.1858	27.292	2622.4	7.8279E+06	7.8279E+06
x( M)	10.080	0.0000	0.0000	5.5800	7.9200	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
5	1.5842E-05	1.7683E-04	423.83	58.324	39.368	42.197	8.8689	26.919	2629.0	7.8279E+06	7.8279E+06
x( M)	10.080	0.0000	0.0000	5.5800	7.9200	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
6	1.4746E-05	1.7725E-04	480.34	68.950	52.042	51.436	15.981	37.742	2823.6	7.8279E+06	7.8279E+06
x( M)	9.3600	0.0000	0.0000	5.4000	7.3800	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
7	1.5828E-05	1.7641E-04	425.49	58.419	39.669	42.279	9.0329	27.061	2583.4	7.8279E+06	7.8279E+06
x( M)	10.080	0.0000	0.0000	5.5800	7.9200	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
8	1.5878E-05	1.7683E-04	423.04	58.105	39.157	42.019	8.7816	26.715	2590.5	7.8279E+06	7.8279E+06
x( M)	10.080	0.0000	0.0000	5.5800	7.9200	0.0000	10.440	4.1400	0.0000	0.0000	0.0000
9	1.4769E-05	1.7725E-04	480.26	68.858	51.962	51.353	15.932	37.627	2787.3	7.8279E+06	7.8279E+06
x( M)	9.3600	0.0000	0.0000	5.4000	7.3800	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
10	1.5836E-05	1.7641E-04	426.07	58.457	39.746	42.311	9.0657	27.089	2549.2	7.8279E+06	7.8279E+06
x( M)	10.080	0.0000	0.0000	5.5800	7.9200	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
11	1.5886E-05	1.7683E-04	423.63	58.145	39.235	42.052	8.8003	26.743	2556.3	7.8279E+06	7.8279E+06
x( M)	10.080	0.0000	0.0000	5.5800	7.9200	0.0000	10.440	4.1400	0.0000	0.0000	0.0000
12	1.4781E-05	1.7725E-04	480.67	68.855	52.003	51.352	15.944	37.614	2752.5	7.8279E+06	7.8279E+06
x( M)	9.3600	0.0000	0.0000	5.4000	7.3800	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
13	1.5499E-05	1.7641E-04	444.94	61.835	43.724	45.195	11.381	30.344	2573.1	7.8279E+06	7.8279E+06
x( M)	9.7200	0.0000	0.0000	5.5800	7.7400	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
14	1.5549E-05	1.7683E-04	441.85	61.430	43.038	44.830	10.992	29.857	2578.1	7.8279E+06	7.8279E+06
x( M)	9.9000	0.0000	0.0000	5.5800	7.7400	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
15	1.4600E-05	1.7725E-04	490.53	70.567	54.387	52.948	17.131	39.613	2747.8	7.8279E+06	7.8279E+06
x( M)	9.1800	0.0000	0.0000	5.4000	7.3800	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
Max. Pile N.	1.5886E-05	1.7725E-04	493.21	71.410	55.270	53.700	17.611	40.618	2900.6	7.8279E+06	7.8279E+06
	11	3	3	3	3	3	3	3	3	1	1

LOAD CASE : 7  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp


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	0.6244	1.0000
2	0.6101	1.0000
3	0.8661	1.0000
4	0.5061	1.0000
5	0.4952	1.0000
6	0.7820	1.0000
7	0.5006	1.0000
8	0.4904	1.0000
9	0.7791	1.0000
10	0.5015	1.0000
11	0.4914	1.0000
12	0.7791	1.0000
13	0.5845	1.0000
14	0.5700	1.0000
15	0.8378	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
33358.9	-2177.94	696.757
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-111.124	6548.49	-5604.44

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>							

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL , M 1.27443E-03	HORIZONTAL Y, M -4.83548E-04	HORIZONTAL Z, M 1.76828E-04
ANGLE ROT. X,RAD -9.27661E-08	ANGLE ROT. Y,RAD 8.12261E-06	ANGLE ROT. Z,RAD 3.28596E-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	1.3327E-03	-4.8271E-04	1.7641E-04	-9.2766E-08	8.1226E-06	3.2860E-06
2	1.3475E-03	-4.8271E-04	1.7683E-04	-9.2766E-08	8.1226E-06	3.2860E-06
3	1.3623E-03	-4.8271E-04	1.7725E-04	-9.2766E-08	8.1226E-06	3.2860E-06
4	1.2962E-03	-4.8313E-04	1.7641E-04	-9.2766E-08	8.1226E-06	3.2860E-06
5	1.3110E-03	-4.8313E-04	1.7683E-04	-9.2766E-08	8.1226E-06	3.2860E-06
6	1.3258E-03	-4.8313E-04	1.7725E-04	-9.2766E-08	8.1226E-06	3.2860E-06
7	1.2596E-03	-4.8355E-04	1.7641E-04	-9.2766E-08	8.1226E-06	3.2860E-06
8	1.2744E-03	-4.8355E-04	1.7683E-04	-9.2766E-08	8.1226E-06	3.2860E-06
9	1.2892E-03	-4.8355E-04	1.7725E-04	-9.2766E-08	8.1226E-06	3.2860E-06
10	1.2231E-03	-4.8396E-04	1.7641E-04	-9.2766E-08	8.1226E-06	3.2860E-06
11	1.2379E-03	-4.8396E-04	1.7683E-04	-9.2766E-08	8.1226E-06	3.2860E-06
12	1.2527E-03	-4.8396E-04	1.7725E-04	-9.2766E-08	8.1226E-06	3.2860E-06
13	1.1865E-03	-4.8438E-04	1.7641E-04	-9.2766E-08	8.1226E-06	3.2860E-06
14	1.2013E-03	-4.8438E-04	1.7683E-04	-9.2766E-08	8.1226E-06	3.2860E-06
15	1.2161E-03	-4.8438E-04	1.7725E-04	-9.2766E-08	8.1226E-06	3.2860E-06
MINIMUM	1.1865E-03	-4.8438E-04	1.7641E-04	-9.2766E-08	8.1226E-06	3.2860E-06
Pile N.	13	13	1	1	1	1
MAXIMUM	1.3623E-03	-4.8271E-04	1.7725E-04	-9.2766E-08	8.1226E-06	3.2860E-06
Pile N.	3	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
1	2325.2	-145.49	46.491	-0.030919	-135.07	-451.53
2	2350.9	-144.12	46.160	-0.030919	-134.53	-448.68
3	2376.6	-166.06	53.696	-0.030919	-149.80	-493.21
4	2261.7	-133.60	42.476	-0.030919	-126.63	-426.42
5	2287.4	-132.41	42.194	-0.030919	-126.16	-423.83
6	2313.1	-159.51	51.433	-0.030919	-145.35	-480.34
7	2198.2	-133.12	42.275	-0.030919	-126.20	-425.49
8	2223.9	-131.99	42.015	-0.030919	-125.77	-423.04
9	2249.6	-159.40	51.349	-0.030919	-145.18	-480.26
10	2134.7	-133.33	42.308	-0.030919	-126.27	-426.07
11	2160.4	-132.21	42.049	-0.030919	-125.84	-423.63
12	2186.1	-159.54	51.348	-0.030919	-145.17	-480.67
13	2071.2	-142.11	45.192	-0.030919	-132.36	-444.94
14	2096.9	-140.64	44.827	-0.030919	-131.73	-441.85
15	2122.6	-164.42	52.945	-0.030919	-148.32	-490.53
MINIMUM	2071.2	-166.06	42.015	-0.030919	-149.80	-493.21
Pile N.	13	3	8	1	3	3
MAXIMUM	2376.6	-131.99	53.696	-0.030919	-125.77	-423.04
Pile N.	3	8	3	1	8	8

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
1	1.3327E-03	-4.8271E-04	1.7641E-04	-9.2766E-08	8.1226E-06	3.2860E-06
2	1.3475E-03	-4.8271E-04	1.7683E-04	-9.2766E-08	8.1226E-06	3.2860E-06
3	1.3623E-03	-4.8271E-04	1.7725E-04	-9.2766E-08	8.1226E-06	3.2860E-06
4	1.2962E-03	-4.8313E-04	1.7641E-04	-9.2766E-08	8.1226E-06	3.2860E-06
5	1.3110E-03	-4.8313E-04	1.7683E-04	-9.2766E-08	8.1226E-06	3.2860E-06
6	1.3258E-03	-4.8313E-04	1.7725E-04	-9.2766E-08	8.1226E-06	3.2860E-06
7	1.2596E-03	-4.8355E-04	1.7641E-04	-9.2766E-08	8.1226E-06	3.2860E-06
8	1.2744E-03	-4.8355E-04	1.7683E-04	-9.2766E-08	8.1226E-06	3.2860E-06
9	1.2892E-03	-4.8355E-04	1.7725E-04	-9.2766E-08	8.1226E-06	3.2860E-06
10	1.2231E-03	-4.8396E-04	1.7641E-04	-9.2766E-08	8.1226E-06	3.2860E-06
11	1.2379E-03	-4.8396E-04	1.7683E-04	-9.2766E-08	8.1226E-06	3.2860E-06
12	1.2527E-03	-4.8396E-04	1.7725E-04	-9.2766E-08	8.1226E-06	3.2860E-06
13	1.1865E-03	-4.8438E-04	1.7641E-04	-9.2766E-08	8.1226E-06	3.2860E-06
14	1.2013E-03	-4.8438E-04	1.7683E-04	-9.2766E-08	8.1226E-06	3.2860E-06
15	1.2161E-03	-4.8438E-04	1.7725E-04	-9.2766E-08	8.1226E-06	3.2860E-06
MINIMUM	1.1865E-03	-4.8438E-04	1.7641E-04	-9.2766E-08	8.1226E-06	3.2860E-06

APPALTATORE:

Consorzio

Soci



ITINERARIO NAPOLI – BARI

PROGETTAZIONE:

Mandataria

Mandanti



RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

PROGETTO ESECUTIVO

RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO
IF28	01	E ZZ CL	VI0403 001	B	93 di 354

Pile N.	13	13	1	1	1	1
MAXIMUM	1.3623E-03	-4.8271E-04	1.7725E-04	-9.2766E-08	8.1226E-06	3.2860E-06
Pile N.	3	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	2325.2	-145.49	46.491	-0.030919	-135.07	-451.53
2	2350.9	-144.12	46.160	-0.030919	-134.53	-448.68
3	2376.6	-166.06	53.696	-0.030919	-149.80	-493.21
4	2261.7	-133.60	42.476	-0.030919	-126.63	-426.42
5	2287.4	-132.41	42.194	-0.030919	-126.16	-423.83
6	2313.1	-159.51	51.433	-0.030919	-145.35	-480.34
7	2198.2	-133.12	42.275	-0.030919	-126.20	-425.49
8	2223.9	-131.99	42.015	-0.030919	-125.77	-423.04
9	2249.6	-159.40	51.349	-0.030919	-145.18	-480.26
10	2134.7	-133.33	42.308	-0.030919	-126.27	-426.07
11	2160.4	-132.21	42.049	-0.030919	-125.84	-423.63
12	2186.1	-159.54	51.348	-0.030919	-145.17	-480.67
13	2071.2	-142.11	45.192	-0.030919	-132.36	-444.94
14	2096.9	-140.64	44.827	-0.030919	-131.73	-441.85
15	2122.6	-164.42	52.945	-0.030919	-148.32	-490.53
MINIMUM	2071.2	-166.06	42.015	-0.030919	-149.80	-493.21
Pile N.	13	3	8	1	3	3
MAXIMUM	2376.6	-131.99	53.696	-0.030919	-125.77	-423.04
Pile N.	3	8	3	1	8	8


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

1	2738.2
2	2744.0
3	2900.6
4	2622.4
5	2629.0
6	2823.6
7	2583.4
8	2590.5
9	2787.3
10	2549.2
11	2556.3
12	2752.5
13	2573.1
14	2578.1
15	2747.8
MINIMUM	2549.2
Pile N.	10
MAXIMUM	2900.6
Pile N.	3

\* EFFECTS FOR Laterally LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2	KN- M**2	KN- M**2
1	-4.8271E-04	-5.3739E-06	-179.84	-135.07	-145.50	-15.971	-95.377	-4.4655	1315.8	7.8279E+06	7.8279E+06
x(M)	0.0000	9.5400	5.5800	0.0000	0.0000	7.5600	4.1400	9.0000	18.000	0.0000	0.0000
2	-4.8271E-04	-5.4047E-06	-178.30	-134.53	-144.13	-15.784	-93.774	-4.3561	1330.4	7.8279E+06	7.8279E+06
x(M)	0.0000	9.5400	5.5800	0.0000	0.0000	7.5600	4.1400	9.0000	18.000	0.0000	0.0000
3	-4.8271E-04	-5.0913E-06	-202.24	-149.80	-166.07	-19.519	-120.60	-6.2310	1344.9	7.8279E+06	7.8279E+06
x(M)	0.0000	9.0000	5.4000	0.0000	0.0000	7.2000	4.1400	9.0000	18.000	0.0000	0.0000
4	-4.8313E-04	-5.5526E-06	-166.62	-126.63	-133.61	-14.037	-81.777	-3.4029	1279.9	7.8279E+06	7.8279E+06
x(M)	0.0000	9.9000	5.7600	0.0000	0.0000	7.7400	4.1400	9.0000	18.000	0.0000	0.0000
5	-4.8313E-04	-5.5832E-06	-165.26	-126.16	-132.42	-13.880	-80.460	-3.3051	1294.4	7.8279E+06	7.8279E+06
x(M)	0.0000	9.9000	5.7600	0.0000	0.0000	7.9200	4.1400	9.0000	18.000	0.0000	0.0000
6	-4.8313E-04	-5.1925E-06	-195.12	-145.35	-159.52	-18.371	-112.22	-5.6844	1309.0	7.8279E+06	7.8279E+06
x(M)	0.0000	9.1800	5.4000	0.0000	0.0000	7.3800	4.1400	9.0000	18.000	0.0000	0.0000
7	-4.8355E-04	-5.5609E-06	-166.08	-126.20	-133.13	-13.938	-81.163	-3.3495	1243.9	7.8279E+06	7.8279E+06
x(M)	0.0000	9.9000	5.7600	0.0000	0.0000	7.7400	4.1400	9.0000	18.000	0.0000	0.0000
8	-4.8355E-04	-5.5896E-06	-164.79	-125.77	-132.00	-13.800	-79.923	-3.2576	1258.5	7.8279E+06	7.8279E+06
x(M)	0.0000	9.9000	5.7600	0.0000	0.0000	7.9200	4.1400	9.0000	18.000	0.0000	0.0000
9	-4.8355E-04	-5.1951E-06	-195.01	-145.18	-159.42	-18.329	-111.98	-5.6636	1273.0	7.8279E+06	7.8279E+06
x(M)	0.0000	9.1800	5.4000	0.0000	0.0000	7.3800	4.1400	9.0000	18.000	0.0000	0.0000
10	-4.8396E-04	-5.5590E-06	-166.33	-126.27	-133.34	-13.953	-81.316	-3.3578	1208.0	7.8279E+06	7.8279E+06
x(M)	0.0000	9.9000	5.7600	0.0000	0.0000	7.7400	4.1400	9.0000	18.000	0.0000	0.0000
11	-4.8396E-04	-5.5878E-06	-165.05	-125.84	-132.22	-13.814	-80.078	-3.2662	1222.6	7.8279E+06	7.8279E+06
x(M)	0.0000	9.9000	5.7600	0.0000	0.0000	7.9200	4.1400	9.0000	18.000	0.0000	0.0000
12	-4.8396E-04	-5.1947E-06	-195.17	-145.17	-159.55	-18.328	-112.04	-5.6631	1237.1	7.8279E+06	7.8279E+06
x(M)	0.0000	9.1800	5.4000	0.0000	0.0000	7.3800	4.1400	9.0000	18.000	0.0000	0.0000
13	-4.8438E-04	-5.4283E-06	-176.01	-132.36	-142.12	-15.320	-91.083	-4.1226	1172.1	7.8279E+06	7.8279E+06
x(M)	0.0000	9.7200	5.5800	0.0000	0.0000	7.5600	4.1400	9.0000	18.000	0.0000	0.0000
14	-4.8438E-04	-5.4654E-06	-174.38	-131.73	-140.65	-15.133	-89.402	-4.0032	1186.6	7.8279E+06	7.8279E+06
x(M)	0.0000	9.7200	5.7600	0.0000	0.0000	7.7400	4.1400	9.0000	18.000	0.0000	0.0000

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   		
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>		

15	-4.8438E-04	-5.1261E-06	-200.54	-148.32	-164.43	-19.121	-118.05	-6.0519	1201.2	7.8279E+06	7.8279E+06
x( M)	0.0000	9.1800	5.4000	0.0000	0.0000	7.2000	4.1400	9.0000	18.000	0.0000	0.0000
Min. Pile N.	-4.8438E-04	-5.5896E-06	-202.24	-149.80	-166.07	-19.519	-120.60	-6.2310	1172.1	7.8279E+06	7.8279E+06
	13	8	3	3	3	3	3	3	13	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2	KN- M**2	KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	1.5295E-05	1.7641E-04	451.53	63.290	45.359	46.494	12.374	31.897	2738.2	7.8279E+06	7.8279E+06
x( M)	9.7200	0.0000	0.0000	5.5800	7.7400	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
2	1.5356E-05	1.7683E-04	448.68	62.940	44.741	46.164	12.013	31.439	2744.0	7.8279E+06	7.8279E+06
x( M)	9.7200	0.0000	0.0000	5.5800	7.7400	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
3	1.4468E-05	1.7725E-04	493.21	71.410	55.271	53.700	17.611	40.617	2900.6	7.8279E+06	7.8279E+06
x( M)	9.1800	0.0000	0.0000	5.2200	7.3800	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
4	1.5787E-05	1.7641E-04	426.42	58.662	39.908	42.479	9.1858	27.292	2622.4	7.8279E+06	7.8279E+06
x( M)	10.080	0.0000	0.0000	5.5800	7.9200	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
5	1.5842E-05	1.7683E-04	423.83	58.324	39.368	42.197	8.8689	26.919	2629.0	7.8279E+06	7.8279E+06
x( M)	10.080	0.0000	0.0000	5.5800	7.9200	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
6	1.4746E-05	1.7725E-04	480.34	68.950	52.042	51.436	15.981	37.742	2823.6	7.8279E+06	7.8279E+06
x( M)	9.3600	0.0000	0.0000	5.4000	7.3800	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
7	1.5828E-05	1.7641E-04	425.49	58.419	39.669	42.279	9.0330	27.061	2583.4	7.8279E+06	7.8279E+06
x( M)	10.080	0.0000	0.0000	5.5800	7.9200	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
8	1.5878E-05	1.7683E-04	423.04	58.105	39.157	42.019	8.7816	26.715	2590.5	7.8279E+06	7.8279E+06
x( M)	10.080	0.0000	0.0000	5.5800	7.9200	0.0000	10.440	4.1400	0.0000	0.0000	0.0000
9	1.4769E-05	1.7725E-04	480.26	68.858	51.962	51.353	15.932	37.627	2787.3	7.8279E+06	7.8279E+06
x( M)	9.3600	0.0000	0.0000	5.4000	7.3800	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
10	1.5836E-05	1.7641E-04	426.07	58.457	39.746	42.311	9.0657	27.089	2549.2	7.8279E+06	7.8279E+06
x( M)	10.080	0.0000	0.0000	5.5800	7.9200	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
11	1.5886E-05	1.7683E-04	423.63	58.145	39.236	42.052	8.8004	26.743	2556.3	7.8279E+06	7.8279E+06
x( M)	10.080	0.0000	0.0000	5.5800	7.9200	0.0000	10.440	4.1400	0.0000	0.0000	0.0000
12	1.4781E-05	1.7725E-04	480.67	68.855	52.003	51.352	15.944	37.614	2752.5	7.8279E+06	7.8279E+06
x( M)	9.3600	0.0000	0.0000	5.4000	7.3800	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
13	1.5499E-05	1.7641E-04	444.94	61.835	43.724	45.195	11.381	30.343	2573.1	7.8279E+06	7.8279E+06
x( M)	9.7200	0.0000	0.0000	5.5800	7.7400	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
14	1.5550E-05	1.7683E-04	441.85	61.430	43.038	44.830	10.992	29.857	2578.1	7.8279E+06	7.8279E+06
x( M)	9.9000	0.0000	0.0000	5.5800	7.7400	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
15	1.4600E-05	1.7725E-04	490.53	70.567	54.387	52.948	17.131	39.613	2747.8	7.8279E+06	7.8279E+06
x( M)	9.1800	0.0000	0.0000	5.4000	7.3800	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
Max. Pile N.	1.5886E-05	1.7725E-04	493.21	71.410	55.271	53.700	17.611	40.617	2900.6	7.8279E+06	7.8279E+06
	11	3	3	3	3	3	3	3	3	1	1

LOAD CASE : 8  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp







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	0.5878	1.0000
2	0.5816	1.0000
3	0.8661	1.0000
4	0.4964	1.0000
5	0.4951	1.0000
6	0.8035	1.0000
7	0.4950	1.0000
8	0.4938	1.0000
9	0.8032	1.0000
10	0.4960	1.0000
11	0.4948	1.0000
12	0.8032	1.0000
13	0.5845	1.0000
14	0.5784	1.0000
15	0.8638	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
31051.5	-4250.16	432.357
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-94.0608	2267.88	4284.56

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>							

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL , M 1.18589E-03	HORIZONTAL Y, M -1.15401E-03	HORIZONTAL Z, M 1.12610E-04
ANGLE ROT. X,RAD 7.91530E-08	ANGLE ROT. Y,RAD 3.39667E-06	ANGLE ROT. Z,RAD 4.81657E-05

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

PILE GROUP *****	DISP. X, M *****	DISP. Y, M *****	DISP. Z, M *****	ROT. X,RAD *****	ROT. Y,RAD *****	ROT. Z,RAD *****
1	9.9971E-04	-1.1547E-03	1.1297E-04	7.9153E-08	3.3967E-06	4.8166E-05
2	1.2165E-03	-1.1547E-03	1.1261E-04	7.9153E-08	3.3967E-06	4.8166E-05
3	1.4332E-03	-1.1547E-03	1.1225E-04	7.9153E-08	3.3967E-06	4.8166E-05
4	9.8443E-04	-1.1544E-03	1.1297E-04	7.9153E-08	3.3967E-06	4.8166E-05
5	1.2012E-03	-1.1544E-03	1.1261E-04	7.9153E-08	3.3967E-06	4.8166E-05
6	1.4179E-03	-1.1544E-03	1.1225E-04	7.9153E-08	3.3967E-06	4.8166E-05
7	9.6914E-04	-1.1540E-03	1.1297E-04	7.9153E-08	3.3967E-06	4.8166E-05
8	1.1859E-03	-1.1540E-03	1.1261E-04	7.9153E-08	3.3967E-06	4.8166E-05
9	1.4026E-03	-1.1540E-03	1.1225E-04	7.9153E-08	3.3967E-06	4.8166E-05
10	9.5386E-04	-1.1537E-03	1.1297E-04	7.9153E-08	3.3967E-06	4.8166E-05
11	1.1706E-03	-1.1537E-03	1.1261E-04	7.9153E-08	3.3967E-06	4.8166E-05
12	1.3874E-03	-1.1537E-03	1.1225E-04	7.9153E-08	3.3967E-06	4.8166E-05
13	9.3857E-04	-1.1533E-03	1.1297E-04	7.9153E-08	3.3967E-06	4.8166E-05
14	1.1553E-03	-1.1533E-03	1.1261E-04	7.9153E-08	3.3967E-06	4.8166E-05
15	1.3721E-03	-1.1533E-03	1.1225E-04	7.9153E-08	3.3967E-06	4.8166E-05
MINIMUM	9.3857E-04	-1.1547E-03	1.1225E-04	7.9153E-08	3.3967E-06	4.8166E-05
Pile N.	13	1	3	1	1	1
MAXIMUM	1.4332E-03	-1.1533E-03	1.1297E-04	7.9153E-08	3.3967E-06	4.8166E-05
Pile N.	3	13	1	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP *****	FOR. X, KN *****	FOR. Y, KN *****	FOR. Z, KN *****	MOM X, KN- M *****	MOM Y, KN- M *****	MOM Z, KN- M *****
1	1746.7	-277.03	28.278	0.026381	-86.876	-832.10
2	2123.2	-275.69	28.045	0.026381	-86.286	-829.41
3	2499.8	-327.78	33.142	0.026381	-96.566	-935.32
4	1720.1	-257.16	26.290	0.026381	-82.619	-789.61
5	2096.7	-256.82	26.163	0.026381	-82.252	-788.99
6	2473.2	-317.19	32.097	0.026381	-94.497	-914.28
7	1693.5	-256.77	26.259	0.026381	-82.552	-788.64
8	2070.1	-256.43	26.134	0.026381	-82.188	-788.05
9	2446.7	-317.06	32.095	0.026381	-94.492	-913.88
10	1667.0	-256.93	26.285	0.026381	-82.607	-788.88
11	2043.5	-256.59	26.159	0.026381	-82.243	-788.29
12	2420.1	-316.96	32.097	0.026381	-94.496	-913.57
13	1640.4	-276.03	28.217	0.026381	-86.744	-829.53
14	2017.0	-274.69	27.984	0.026381	-86.154	-826.83
15	2393.6	-327.03	33.112	0.026381	-96.507	-933.31
MINIMUM	1640.4	-327.78	26.134	0.026381	-96.566	-935.32
Pile N.	13	3	8	1	3	3
MAXIMUM	2499.8	-256.43	33.142	0.026381	-82.188	-788.05
Pile N.	3	8	3	1	8	8

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

PILE GROUP *****	DISP. x, M *****	DISP. y, M *****	DISP. z, M *****	ROT. x,RAD *****	ROT. y,RAD *****	ROT. z,RAD *****
1	9.9971E-04	-1.1547E-03	1.1297E-04	7.9153E-08	3.3967E-06	4.8166E-05
2	1.2165E-03	-1.1547E-03	1.1261E-04	7.9153E-08	3.3967E-06	4.8166E-05
3	1.4332E-03	-1.1547E-03	1.1225E-04	7.9153E-08	3.3967E-06	4.8166E-05
4	9.8443E-04	-1.1544E-03	1.1297E-04	7.9153E-08	3.3967E-06	4.8166E-05
5	1.2012E-03	-1.1544E-03	1.1261E-04	7.9153E-08	3.3967E-06	4.8166E-05
6	1.4179E-03	-1.1544E-03	1.1225E-04	7.9153E-08	3.3967E-06	4.8166E-05
7	9.6914E-04	-1.1540E-03	1.1297E-04	7.9153E-08	3.3967E-06	4.8166E-05
8	1.1859E-03	-1.1540E-03	1.1261E-04	7.9153E-08	3.3967E-06	4.8166E-05
9	1.4026E-03	-1.1540E-03	1.1225E-04	7.9153E-08	3.3967E-06	4.8166E-05
10	9.5386E-04	-1.1537E-03	1.1297E-04	7.9153E-08	3.3967E-06	4.8166E-05
11	1.1706E-03	-1.1537E-03	1.1261E-04	7.9153E-08	3.3967E-06	4.8166E-05
12	1.3874E-03	-1.1537E-03	1.1225E-04	7.9153E-08	3.3967E-06	4.8166E-05
13	9.3857E-04	-1.1533E-03	1.1297E-04	7.9153E-08	3.3967E-06	4.8166E-05
14	1.1553E-03	-1.1533E-03	1.1261E-04	7.9153E-08	3.3967E-06	4.8166E-05
15	1.3721E-03	-1.1533E-03	1.1225E-04	7.9153E-08	3.3967E-06	4.8166E-05
MINIMUM	9.3857E-04	-1.1547E-03	1.1225E-04	7.9153E-08	3.3967E-06	4.8166E-05

APPALTATORE:

Consorzio

Soci



ITINERARIO NAPOLI – BARI

PROGETTAZIONE:

Mandataria

Mandanti



RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

PROGETTO ESECUTIVO

RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO
IF28	01	E ZZ CL	VI0403 001	B	96 di 354

Pile N.	13	1	3	1	1	1
MAXIMUM	1.4332E-03	-1.1533E-03	1.1297E-04	7.9153E-08	3.3967E-06	4.8166E-05
Pile N.	3	13	1	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	1746.7	-277.03	28.278	0.026381	-86.876	-832.10
2	2123.2	-275.69	28.045	0.026381	-86.286	-829.41
3	2499.8	-327.78	33.142	0.026381	-96.566	-935.32
4	1720.1	-257.16	26.290	0.026381	-82.619	-789.61
5	2096.7	-256.82	26.163	0.026381	-82.252	-788.99
6	2473.2	-317.19	32.097	0.026381	-94.497	-914.28
7	1693.5	-256.77	26.259	0.026381	-82.552	-788.64
8	2070.1	-256.43	26.134	0.026381	-82.188	-788.05
9	2446.7	-317.06	32.095	0.026381	-94.492	-913.88
10	1667.0	-256.93	26.285	0.026381	-82.607	-788.88
11	2043.5	-256.59	26.159	0.026381	-82.243	-788.29
12	2420.1	-316.96	32.097	0.026381	-94.496	-913.57
13	1640.4	-276.03	28.217	0.026381	-86.744	-829.53
14	2017.0	-274.69	27.984	0.026381	-86.154	-826.83
15	2393.6	-327.03	33.112	0.026381	-96.507	-933.31
MINIMUM	1640.4	-327.78	26.134	0.026381	-96.566	-935.32
Pile N.	13	3	8	1	3	3
MAXIMUM	2499.8	-256.43	33.142	0.026381	-82.188	-788.05
Pile N.	3	8	3	1	8	8


PILE GROUP	STRESS, KN/ M**2
1	3513.4
2	3718.2
3	4252.4
4	3369.5
5	3580.6
6	4173.6
7	3351.5
8	3562.7
9	4157.4
10	3337.2
11	3548.4
12	4141.4
13	3445.5
14	3650.3
15	4186.3
MINIMUM	3337.2
Pile N.	10
MAXIMUM	4252.4
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	-1.1547E-03	-3.3107E-06	-379.55	-86.876	-277.05	-9.3535	-147.52	-2.2467	988.40	7.8279E+06	7.8279E+06
x( M)	0.0000	9.9000	5.7600	0.0000	0.0000	7.9200	4.1400	9.0000	18.000	0.0000	0.0000
2	-1.1547E-03	-3.3056E-06	-378.17	-86.286	-275.71	-9.2663	-146.33	-2.2047	1201.5	7.8279E+06	7.8279E+06
x( M)	0.0000	9.9000	5.7600	0.0000	0.0000	7.9200	4.1400	9.0000	18.000	0.0000	0.0000
3	-1.1547E-03	-3.0572E-06	-431.89	-96.566	-327.81	-11.623	-197.17	-3.6255	1414.6	7.8279E+06	7.8279E+06
x( M)	0.0000	9.3600	5.5800	0.0000	0.0000	7.5600	4.1400	9.0000	18.000	0.0000	0.0000
4	-1.1544E-03	-3.4073E-06	-358.55	-82.619	-257.18	-8.4681	-129.58	-1.9385	973.38	7.8279E+06	7.8279E+06
x( M)	0.0000	10.260	5.9400	0.0000	0.0000	8.1000	4.1400	10.620	18.000	0.0000	0.0000
5	-1.1544E-03	-3.3986E-06	-358.26	-82.252	-256.84	-8.4299	-129.33	-1.9293	1186.5	7.8279E+06	7.8279E+06
x( M)	0.0000	10.260	5.9400	0.0000	0.0000	8.1000	4.1400	10.620	18.000	0.0000	0.0000
6	-1.1544E-03	-3.1047E-06	-421.24	-94.497	-317.22	-11.130	-186.50	-3.3486	1399.6	7.8279E+06	7.8279E+06
x( M)	0.0000	9.5400	5.5800	0.0000	0.0000	7.5600	4.1400	9.0000	18.000	0.0000	0.0000
7	-1.1540E-03	-3.4090E-06	-358.10	-82.552	-256.78	-8.4537	-129.27	-1.9348	958.35	7.8279E+06	7.8279E+06
x( M)	0.0000	10.260	5.9400	0.0000	0.0000	8.1000	4.1400	10.620	18.000	0.0000	0.0000
8	-1.1540E-03	-3.4003E-06	-357.82	-82.188	-256.45	-8.4161	-129.03	-1.9258	1171.4	7.8279E+06	7.8279E+06
x( M)	0.0000	10.260	5.9400	0.0000	0.0000	8.1000	4.1400	10.620	18.000	0.0000	0.0000
9	-1.1540E-03	-3.1050E-06	-421.09	-94.492	-317.08	-11.128	-186.42	-3.3477	1384.5	7.8279E+06	7.8279E+06
x( M)	0.0000	9.5400	5.5800	0.0000	0.0000	7.5600	4.1400	9.0000	18.000	0.0000	0.0000
10	-1.1537E-03	-3.4078E-06	-358.25	-82.607	-256.94	-8.4647	-129.45	-1.9375	943.32	7.8279E+06	7.8279E+06
x( M)	0.0000	10.260	5.9400	0.0000	0.0000	8.1000	4.1400	10.620	18.000	0.0000	0.0000
11	-1.1537E-03	-3.3991E-06	-357.98	-82.243	-256.61	-8.4271	-129.21	-1.9285	1156.4	7.8279E+06	7.8279E+06
x( M)	0.0000	10.260	5.9400	0.0000	0.0000	8.1000	4.1400	10.620	18.000	0.0000	0.0000
12	-1.1537E-03	-3.1050E-06	-420.97	-94.496	-316.99	-11.129	-186.39	-3.3479	1369.5	7.8279E+06	7.8279E+06
x( M)	0.0000	9.5400	5.5800	0.0000	0.0000	7.5600	4.1400	9.0000	18.000	0.0000	0.0000
13	-1.1533E-03	-3.3136E-06	-378.38	-86.744	-276.04	-9.3232	-146.78	-2.2284	928.29	7.8279E+06	7.8279E+06
x( M)	0.0000	9.9000	5.7600	0.0000	0.0000	7.9200	4.1400	9.0000	18.000	0.0000	0.0000
14	-1.1533E-03	-3.3090E-06	-377.00	-86.154	-274.71	-9.2360	-145.59	-2.1864	1141.4	7.8279E+06	7.8279E+06
x( M)	0.0000	10.080	5.7600	0.0000	0.0000	7.9200	4.1400	9.0000	18.000	0.0000	0.0000



<b>APPALTATORE:</b> Consorzio <b>Soci</b>   			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   								
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>								

15	-1.1533E-03	-3.0591E-06	-431.05	-96.507	-327.05	-11.608	-196.64	-3.6168	1354.5	7.8279E+06	7.8279E+06
x( M)	0.0000	9.3600	5.5800	0.0000	0.0000	7.5600	4.1400	9.0000	18.000	0.0000	0.0000
Min. Pile N.	-1.1547E-03	-3.4090E-06	-431.89	-96.566	-327.81	-11.623	-197.17	-3.6255	928.29	7.8279E+06	7.8279E+06
	1	7	3	3	3	3	3	3	13	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-Dir	DISPL. z-Dir	MOMENT z-Dir	MOMENT y-Dir	SHEAR y-Dir	SHEAR z-Dir	SOIL REACT y-Dir	SOIL REACT z-Dir	TOTAL STRESS	FLEX. RIG. z-Dir	FLEX. RIG. y-Dir
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2	KN- M**2	KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	3.3427E-05	1.1297E-04	832.10	37.589	94.449	28.280	23.049	14.830	3513.4	7.8279E+06	7.8279E+06
x( M)	9.9000	0.0000	0.0000	5.9400	7.9200	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
2	3.3491E-05	1.1261E-04	829.41	37.340	93.887	28.047	22.701	14.661	3718.2	7.8279E+06	7.8279E+06
x( M)	9.9000	0.0000	0.0000	5.9400	7.9200	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
3	3.1036E-05	1.1225E-04	935.32	42.495	118.02	33.144	36.964	19.675	4252.4	7.8279E+06	7.8279E+06
x( M)	9.3600	0.0000	0.0000	5.5800	7.5600	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
4	3.4374E-05	1.1297E-04	789.61	35.499	85.507	26.291	19.495	13.035	3369.5	7.8279E+06	7.8279E+06
x( M)	10.260	0.0000	0.0000	5.9400	8.1000	0.0000	10.620	4.1400	0.0000	0.0000	0.0000
5	3.4400E-05	1.1261E-04	788.99	35.355	85.401	26.165	19.467	12.965	3580.6	7.8279E+06	7.8279E+06
x( M)	10.260	0.0000	0.0000	5.9400	8.1000	0.0000	10.620	4.1400	0.0000	0.0000	0.0000
6	3.1490E-05	1.1225E-04	914.28	41.439	113.08	32.100	34.188	18.619	4173.6	7.8279E+06	7.8279E+06
x( M)	9.5400	0.0000	0.0000	5.5800	7.5600	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
7	3.4382E-05	1.1297E-04	788.64	35.465	85.337	26.261	19.452	13.008	3351.5	7.8279E+06	7.8279E+06
x( M)	10.260	0.0000	0.0000	5.9400	8.1000	0.0000	10.620	4.1400	0.0000	0.0000	0.0000
8	3.4407E-05	1.1261E-04	788.05	35.322	85.237	26.136	19.426	12.940	3562.7	7.8279E+06	7.8279E+06
x( M)	10.260	0.0000	0.0000	5.9400	8.1000	0.0000	10.620	4.1400	0.0000	0.0000	0.0000
9	3.1483E-05	1.1225E-04	913.88	41.437	113.03	32.098	34.169	18.617	4157.4	7.8279E+06	7.8279E+06
x( M)	9.5400	0.0000	0.0000	5.5800	7.5600	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
10	3.4358E-05	1.1297E-04	788.88	35.493	85.418	26.286	19.473	13.031	3337.2	7.8279E+06	7.8279E+06
x( M)	10.260	0.0000	0.0000	5.9400	8.1000	0.0000	10.620	4.1400	0.0000	0.0000	0.0000
11	3.4383E-05	1.1261E-04	788.29	35.350	85.319	26.161	19.447	12.963	3548.4	7.8279E+06	7.8279E+06
x( M)	10.260	0.0000	0.0000	5.9400	8.1000	0.0000	10.620	4.1400	0.0000	0.0000	0.0000
12	3.1473E-05	1.1225E-04	913.57	41.439	113.00	32.099	34.160	18.620	4141.4	7.8279E+06	7.8279E+06
x( M)	9.5400	0.0000	0.0000	5.5800	7.5600	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
13	3.3416E-05	1.1297E-04	829.53	37.526	94.028	28.218	22.840	14.775	3445.5	7.8279E+06	7.8279E+06
x( M)	9.9000	0.0000	0.0000	5.9400	7.9200	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
14	3.3479E-05	1.1261E-04	826.83	37.277	93.466	27.986	22.492	14.607	3650.3	7.8279E+06	7.8279E+06
x( M)	9.9000	0.0000	0.0000	5.9400	7.9200	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
15	3.1017E-05	1.1225E-04	933.31	42.466	117.72	33.115	36.829	19.648	4186.3	7.8279E+06	7.8279E+06
x( M)	9.3600	0.0000	0.0000	5.5800	7.5600	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
Max. Pile N.	3.4407E-05	1.1297E-04	935.32	42.495	118.02	33.144	36.964	19.675	4252.4	7.8279E+06	7.8279E+06
	8	1	3	3	3	3	3	3	3	1	1

LOAD CASE : 9  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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	0.6244	1.0000
2	0.6101	1.0000
3	0.8661	1.0000
4	0.5061	1.0000
5	0.4952	1.0000
6	0.7820	1.0000
7	0.5006	1.0000
8	0.4904	1.0000
9	0.7791	1.0000
10	0.5015	1.0000
11	0.4914	1.0000
12	0.7791	1.0000
13	0.5845	1.0000
14	0.5700	1.0000
15	0.8378	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
33358.9	-2177.94	696.757
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-111.124	6548.49	-5604.80

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>							

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL , M 1.27443E-03	HORIZONTAL Y, M -4.83544E-04	HORIZONTAL Z, M 1.76828E-04
ANGLE ROT. X,RAD -9.27703E-08	ANGLE ROT. Y,RAD 8.12261E-06	ANGLE ROT. Z,RAD 3.28500E-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	1.3327E-03	-4.8271E-04	1.7641E-04	-9.2770E-08	8.1226E-06	3.2850E-06
2	1.3475E-03	-4.8271E-04	1.7683E-04	-9.2770E-08	8.1226E-06	3.2850E-06
3	1.3623E-03	-4.8271E-04	1.7725E-04	-9.2770E-08	8.1226E-06	3.2850E-06
4	1.2962E-03	-4.8313E-04	1.7641E-04	-9.2770E-08	8.1226E-06	3.2850E-06
5	1.3110E-03	-4.8313E-04	1.7683E-04	-9.2770E-08	8.1226E-06	3.2850E-06
6	1.3258E-03	-4.8313E-04	1.7725E-04	-9.2770E-08	8.1226E-06	3.2850E-06
7	1.2596E-03	-4.8354E-04	1.7641E-04	-9.2770E-08	8.1226E-06	3.2850E-06
8	1.2744E-03	-4.8354E-04	1.7683E-04	-9.2770E-08	8.1226E-06	3.2850E-06
9	1.2892E-03	-4.8354E-04	1.7725E-04	-9.2770E-08	8.1226E-06	3.2850E-06
10	1.2231E-03	-4.8396E-04	1.7641E-04	-9.2770E-08	8.1226E-06	3.2850E-06
11	1.2379E-03	-4.8396E-04	1.7683E-04	-9.2770E-08	8.1226E-06	3.2850E-06
12	1.2527E-03	-4.8396E-04	1.7725E-04	-9.2770E-08	8.1226E-06	3.2850E-06
13	1.1865E-03	-4.8438E-04	1.7641E-04	-9.2770E-08	8.1226E-06	3.2850E-06
14	1.2013E-03	-4.8438E-04	1.7683E-04	-9.2770E-08	8.1226E-06	3.2850E-06
15	1.2161E-03	-4.8438E-04	1.7725E-04	-9.2770E-08	8.1226E-06	3.2850E-06
MINIMUM	1.1865E-03	-4.8438E-04	1.7641E-04	-9.2770E-08	8.1226E-06	3.2850E-06
Pile N.	13	13	1	1	1	1
MAXIMUM	1.3623E-03	-4.8271E-04	1.7725E-04	-9.2770E-08	8.1226E-06	3.2850E-06
Pile N.	3	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
1	2325.3	-145.49	46.491	-0.030920	-135.07	-451.54
2	2350.9	-144.12	46.160	-0.030920	-134.53	-448.68
3	2376.6	-166.06	53.696	-0.030920	-149.80	-493.21
4	2261.7	-133.60	42.476	-0.030920	-126.63	-426.42
5	2287.4	-132.41	42.194	-0.030920	-126.16	-423.83
6	2313.1	-159.51	51.433	-0.030920	-145.35	-480.34
7	2198.2	-133.12	42.275	-0.030920	-126.20	-425.49
8	2223.9	-131.99	42.015	-0.030920	-125.77	-423.04
9	2249.6	-159.40	51.349	-0.030920	-145.18	-480.26
10	2134.7	-133.33	42.308	-0.030920	-126.27	-426.07
11	2160.4	-132.21	42.049	-0.030920	-125.84	-423.63
12	2186.1	-159.54	51.348	-0.030920	-145.17	-480.67
13	2071.2	-142.11	45.192	-0.030920	-132.36	-444.94
14	2096.9	-140.64	44.827	-0.030920	-131.73	-441.85
15	2122.6	-164.42	52.945	-0.030920	-148.32	-490.53
MINIMUM	2071.2	-166.06	42.015	-0.030920	-149.80	-493.21
Pile N.	13	3	8	1	3	3
MAXIMUM	2376.6	-131.99	53.696	-0.030920	-125.77	-423.04
Pile N.	3	8	3	1	8	8

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
1	1.3327E-03	-4.8271E-04	1.7641E-04	-9.2770E-08	8.1226E-06	3.2850E-06
2	1.3475E-03	-4.8271E-04	1.7683E-04	-9.2770E-08	8.1226E-06	3.2850E-06
3	1.3623E-03	-4.8271E-04	1.7725E-04	-9.2770E-08	8.1226E-06	3.2850E-06
4	1.2962E-03	-4.8313E-04	1.7641E-04	-9.2770E-08	8.1226E-06	3.2850E-06
5	1.3110E-03	-4.8313E-04	1.7683E-04	-9.2770E-08	8.1226E-06	3.2850E-06
6	1.3258E-03	-4.8313E-04	1.7725E-04	-9.2770E-08	8.1226E-06	3.2850E-06
7	1.2596E-03	-4.8354E-04	1.7641E-04	-9.2770E-08	8.1226E-06	3.2850E-06
8	1.2744E-03	-4.8354E-04	1.7683E-04	-9.2770E-08	8.1226E-06	3.2850E-06
9	1.2892E-03	-4.8354E-04	1.7725E-04	-9.2770E-08	8.1226E-06	3.2850E-06
10	1.2231E-03	-4.8396E-04	1.7641E-04	-9.2770E-08	8.1226E-06	3.2850E-06
11	1.2379E-03	-4.8396E-04	1.7683E-04	-9.2770E-08	8.1226E-06	3.2850E-06
12	1.2527E-03	-4.8396E-04	1.7725E-04	-9.2770E-08	8.1226E-06	3.2850E-06
13	1.1865E-03	-4.8438E-04	1.7641E-04	-9.2770E-08	8.1226E-06	3.2850E-06
14	1.2013E-03	-4.8438E-04	1.7683E-04	-9.2770E-08	8.1226E-06	3.2850E-06
15	1.2161E-03	-4.8438E-04	1.7725E-04	-9.2770E-08	8.1226E-06	3.2850E-06
MINIMUM	1.1865E-03	-4.8438E-04	1.7641E-04	-9.2770E-08	8.1226E-06	3.2850E-06

APPALTATORE:

Consorzio

Soci



ITINERARIO NAPOLI – BARI

PROGETTAZIONE:

Mandataria

Mandanti



RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

PROGETTO ESECUTIVO

RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO
IF28	01	E ZZ CL	VI0403 001	B	99 di 354

Pile N.	13	13	1	1	1	1
MAXIMUM	1.3623E-03	-4.8271E-04	1.7725E-04	-9.2770E-08	8.1226E-06	3.2850E-06
Pile N.	3	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	2325.3	-145.49	46.491	-0.030920	-135.07	-451.54
2	2350.9	-144.12	46.160	-0.030920	-134.53	-448.68
3	2376.6	-166.06	53.696	-0.030920	-149.80	-493.21
4	2261.7	-133.60	42.476	-0.030920	-126.63	-426.42
5	2287.4	-132.41	42.194	-0.030920	-126.16	-423.83
6	2313.1	-159.51	51.433	-0.030920	-145.35	-480.34
7	2198.2	-133.12	42.275	-0.030920	-126.20	-425.49
8	2223.9	-131.99	42.015	-0.030920	-125.77	-423.04
9	2249.6	-159.40	51.349	-0.030920	-145.18	-480.26
10	2134.7	-133.33	42.308	-0.030920	-126.27	-426.07
11	2160.4	-132.21	42.049	-0.030920	-125.84	-423.63
12	2186.1	-159.54	51.348	-0.030920	-145.17	-480.67
13	2071.2	-142.11	45.192	-0.030920	-132.36	-444.94
14	2096.9	-140.64	44.827	-0.030920	-131.73	-441.85
15	2122.6	-164.42	52.945	-0.030920	-148.32	-490.53
MINIMUM	2071.2	-166.06	42.015	-0.030920	-149.80	-493.21
Pile N.	13	3	8	1	3	3
MAXIMUM	2376.6	-131.99	53.696	-0.030920	-125.77	-423.04
Pile N.	3	8	3	1	8	8

PILE GROUP	STRESS, KN/ M**2
1	2738.2
2	2744.1
3	2900.6
4	2622.4
5	2629.0
6	2823.6
7	2583.4
8	2590.5
9	2787.3
10	2549.2
11	2556.3
12	2752.5
13	2573.1
14	2578.1
15	2747.8
MINIMUM	2549.2
Pile N.	10
MAXIMUM	2900.6
Pile N.	3

\* EFFECTS FOR Laterally LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2	KN- M**2	KN- M**2
1	-4.8271E-04	-5.3739E-06	-179.84	-135.07	-145.50	-15.971	-95.377	-4.4655	1315.8	7.8279E+06	7.8279E+06
x( M)	0.0000	9.5400	5.5800	0.0000	0.0000	7.5600	4.1400	9.0000	18.000	0.0000	0.0000
2	-4.8271E-04	-5.4047E-06	-178.30	-134.53	-144.13	-15.784	-93.774	-4.3561	1330.4	7.8279E+06	7.8279E+06
x( M)	0.0000	9.5400	5.5800	0.0000	0.0000	7.5600	4.1400	9.0000	18.000	0.0000	0.0000
3	-4.8271E-04	-5.0913E-06	-202.24	-149.80	-166.07	-19.519	-120.60	-6.2310	1344.9	7.8279E+06	7.8279E+06
x( M)	0.0000	9.0000	5.4000	0.0000	0.0000	7.2000	4.1400	9.0000	18.000	0.0000	0.0000
4	-4.8313E-04	-5.5526E-06	-166.62	-126.63	-133.61	-14.037	-81.777	-3.4029	1279.9	7.8279E+06	7.8279E+06
x( M)	0.0000	9.9000	5.7600	0.0000	0.0000	7.7400	4.1400	9.0000	18.000	0.0000	0.0000
5	-4.8313E-04	-5.5832E-06	-165.26	-126.16	-132.42	-13.880	-80.460	-3.3051	1294.4	7.8279E+06	7.8279E+06
x( M)	0.0000	9.9000	5.7600	0.0000	0.0000	7.9200	4.1400	9.0000	18.000	0.0000	0.0000
6	-4.8313E-04	-5.1925E-06	-195.12	-145.35	-159.52	-18.371	-112.22	-5.6844	1309.0	7.8279E+06	7.8279E+06
x( M)	0.0000	9.1800	5.4000	0.0000	0.0000	7.3800	4.1400	9.0000	18.000	0.0000	0.0000
7	-4.8354E-04	-5.5609E-06	-166.08	-126.20	-133.13	-13.938	-81.163	-3.3495	1244.0	7.8279E+06	7.8279E+06
x( M)	0.0000	9.9000	5.7600	0.0000	0.0000	7.7400	4.1400	9.0000	18.000	0.0000	0.0000
8	-4.8354E-04	-5.5896E-06	-164.79	-125.77	-132.00	-13.800	-79.923	-3.2576	1258.5	7.8279E+06	7.8279E+06
x( M)	0.0000	9.9000	5.7600	0.0000	0.0000	7.9200	4.1400	9.0000	18.000	0.0000	0.0000
9	-4.8354E-04	-5.1951E-06	-195.01	-145.18	-159.42	-18.329	-111.98	-5.6636	1273.0	7.8279E+06	7.8279E+06
x( M)	0.0000	9.1800	5.4000	0.0000	0.0000	7.3800	4.1400	9.0000	18.000	0.0000	0.0000
10	-4.8396E-04	-5.5590E-06	-166.33	-126.27	-133.34	-13.953	-81.316	-3.3578	1208.0	7.8279E+06	7.8279E+06
x( M)	0.0000	9.9000	5.7600	0.0000	0.0000	7.7400	4.1400	9.0000	18.000	0.0000	0.0000
11	-4.8396E-04	-5.5878E-06	-165.05	-125.84	-132.22	-13.814	-80.078	-3.2662	1222.6	7.8279E+06	7.8279E+06
x( M)	0.0000	9.9000	5.7600	0.0000	0.0000	7.9200	4.1400	9.0000	18.000	0.0000	0.0000
12	-4.8396E-04	-5.1947E-06	-195.17	-145.17	-159.55	-18.328	-112.04	-5.6631	1237.1	7.8279E+06	7.8279E+06
x( M)	0.0000	9.1800	5.4000	0.0000	0.0000	7.3800	4.1400	9.0000	18.000	0.0000	0.0000
13	-4.8438E-04	-5.4283E-06	-176.01	-132.36	-142.12	-15.320	-91.083	-4.1226	1172.1	7.8279E+06	7.8279E+06
x( M)	0.0000	9.7200	5.5800	0.0000	0.0000	7.5600	4.1400	9.0000	18.000	0.0000	0.0000
14	-4.8438E-04	-5.4654E-06	-174.38	-131.73	-140.65	-15.133	-89.401	-4.0032	1186.6	7.8279E+06	7.8279E+06
x( M)	0.0000	9.7200	5.7600	0.0000	0.0000	7.7400	4.1400	9.0000	18.000	0.0000	0.0000

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   			<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   								
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>			COMMESSA <b>IF28</b>	LOTTO <b>01</b>	CODIFICA <b>E ZZ CL</b>	DOCUMENTO <b>VI0403 001</b>	REV. <b>B</b>	FOGLIO <b>100 di 354</b>

15	-4.8438E-04	-5.1261E-06	-200.54	-148.32	-164.43	-19.121	-118.05	-6.0519	1201.1	7.8279E+06	7.8279E+06
x( M)	0.0000	9.1800	5.4000	0.0000	0.0000	7.2000	4.1400	9.0000	18.000	0.0000	0.0000
Min. Pile N.	-4.8438E-04	-5.5896E-06	-202.24	-149.80	-166.07	-19.519	-120.60	-6.2310	1172.1	7.8279E+06	7.8279E+06
	13	8	3	3	3	3	3	3	13	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-Dir	DISPL. z-Dir	MOMENT z-Dir	MOMENT y-Dir	SHEAR y-Dir	SHEAR z-Dir	SOIL REACT y-Dir	SOIL REACT z-Dir	TOTAL STRESS	FLEX. RIG. z-Dir	FLEX. RIG. y-Dir
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2	KN- M**2	KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	1.5295E-05	1.7641E-04	451.54	63.290	45.359	46.494	12.374	31.897	2738.2	7.8279E+06	7.8279E+06
x( M)	9.7200	0.0000	0.0000	5.5800	7.7400	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
2	1.5356E-05	1.7683E-04	448.68	62.940	44.741	46.164	12.013	31.440	2744.1	7.8279E+06	7.8279E+06
x( M)	9.7200	0.0000	0.0000	5.5800	7.7400	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
3	1.4468E-05	1.7725E-04	493.21	71.410	55.270	53.700	17.611	40.618	2900.6	7.8279E+06	7.8279E+06
x( M)	9.1800	0.0000	0.0000	5.2200	7.3800	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
4	1.5786E-05	1.7641E-04	426.42	58.662	39.907	42.479	9.1858	27.292	2622.4	7.8279E+06	7.8279E+06
x( M)	10.080	0.0000	0.0000	5.5800	7.9200	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
5	1.5842E-05	1.7683E-04	423.83	58.324	39.368	42.197	8.8689	26.919	2629.0	7.8279E+06	7.8279E+06
x( M)	10.080	0.0000	0.0000	5.5800	7.9200	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
6	1.4746E-05	1.7725E-04	480.34	68.950	52.042	51.436	15.981	37.742	2823.6	7.8279E+06	7.8279E+06
x( M)	9.3600	0.0000	0.0000	5.4000	7.3800	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
7	1.5828E-05	1.7641E-04	425.49	58.419	39.669	42.279	9.0329	27.061	2583.4	7.8279E+06	7.8279E+06
x( M)	10.080	0.0000	0.0000	5.5800	7.9200	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
8	1.5878E-05	1.7683E-04	423.04	58.105	39.157	42.019	8.7816	26.715	2590.5	7.8279E+06	7.8279E+06
x( M)	10.080	0.0000	0.0000	5.5800	7.9200	0.0000	10.440	4.1400	0.0000	0.0000	0.0000
9	1.4769E-05	1.7725E-04	480.26	68.858	51.962	51.353	15.932	37.627	2787.3	7.8279E+06	7.8279E+06
x( M)	9.3600	0.0000	0.0000	5.4000	7.3800	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
10	1.5836E-05	1.7641E-04	426.07	58.457	39.746	42.311	9.0657	27.089	2549.2	7.8279E+06	7.8279E+06
x( M)	10.080	0.0000	0.0000	5.5800	7.9200	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
11	1.5886E-05	1.7683E-04	423.63	58.145	39.235	42.052	8.8003	26.743	2556.3	7.8279E+06	7.8279E+06
x( M)	10.080	0.0000	0.0000	5.5800	7.9200	0.0000	10.440	4.1400	0.0000	0.0000	0.0000
12	1.4781E-05	1.7725E-04	480.67	68.855	52.003	51.352	15.944	37.614	2752.5	7.8279E+06	7.8279E+06
x( M)	9.3600	0.0000	0.0000	5.4000	7.3800	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
13	1.5499E-05	1.7641E-04	444.94	61.835	43.724	45.195	11.381	30.344	2573.1	7.8279E+06	7.8279E+06
x( M)	9.7200	0.0000	0.0000	5.5800	7.7400	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
14	1.5549E-05	1.7683E-04	441.85	61.430	43.038	44.830	10.992	29.857	2578.1	7.8279E+06	7.8279E+06
x( M)	9.9000	0.0000	0.0000	5.5800	7.7400	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
15	1.4600E-05	1.7725E-04	490.53	70.567	54.387	52.948	17.131	39.613	2747.8	7.8279E+06	7.8279E+06
x( M)	9.1800	0.0000	0.0000	5.4000	7.3800	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
Max. Pile N.	1.5886E-05	1.7725E-04	493.21	71.410	55.270	53.700	17.611	40.618	2900.6	7.8279E+06	7.8279E+06
	11	3	3	3	3	3	3	3	3	1	1

LOAD CASE : 10  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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	0.5885	1.0000
2	0.5821	1.0000
3	0.8661	1.0000
4	0.4966	1.0000
5	0.4951	1.0000
6	0.8031	1.0000
7	0.4951	1.0000
8	0.4937	1.0000
9	0.8028	1.0000
10	0.4961	1.0000
11	0.4947	1.0000
12	0.8028	1.0000
13	0.5845	1.0000
14	0.5782	1.0000
15	0.8634	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
32526.2	-4433.76	493.797
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-183.189	4115.61	8688.72

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>							<b>COMMESSA</b> <b>IF28</b>

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL , M 1.24248E-03	HORIZONTAL Y, M -1.24838E-03	HORIZONTAL Z, M 1.33935E-04
ANGLE ROT. X,RAD -2.57717E-07	ANGLE ROT. Y,RAD 5.30102E-06	ANGLE ROT. Z,RAD 6.16870E-05

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

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	1.0126E-03	-1.2461E-03	1.3277E-04	-2.5772E-07	5.3010E-06	6.1687E-05
2	1.2902E-03	-1.2461E-03	1.3394E-04	-2.5772E-07	5.3010E-06	6.1687E-05
3	1.5678E-03	-1.2461E-03	1.3510E-04	-2.5772E-07	5.3010E-06	6.1687E-05
4	9.8874E-04	-1.2472E-03	1.3277E-04	-2.5772E-07	5.3010E-06	6.1687E-05
5	1.2663E-03	-1.2472E-03	1.3394E-04	-2.5772E-07	5.3010E-06	6.1687E-05
6	1.5439E-03	-1.2472E-03	1.3510E-04	-2.5772E-07	5.3010E-06	6.1687E-05
7	9.6489E-04	-1.2484E-03	1.3277E-04	-2.5772E-07	5.3010E-06	6.1687E-05
8	1.2425E-03	-1.2484E-03	1.3394E-04	-2.5772E-07	5.3010E-06	6.1687E-05
9	1.5201E-03	-1.2484E-03	1.3510E-04	-2.5772E-07	5.3010E-06	6.1687E-05
10	9.4103E-04	-1.2495E-03	1.3277E-04	-2.5772E-07	5.3010E-06	6.1687E-05
11	1.2186E-03	-1.2495E-03	1.3394E-04	-2.5772E-07	5.3010E-06	6.1687E-05
12	1.4962E-03	-1.2495E-03	1.3510E-04	-2.5772E-07	5.3010E-06	6.1687E-05
13	9.1718E-04	-1.2507E-03	1.3277E-04	-2.5772E-07	5.3010E-06	6.1687E-05
14	1.1948E-03	-1.2507E-03	1.3394E-04	-2.5772E-07	5.3010E-06	6.1687E-05
15	1.4724E-03	-1.2507E-03	1.3510E-04	-2.5772E-07	5.3010E-06	6.1687E-05
MINIMUM	9.1718E-04	-1.2507E-03	1.3277E-04	-2.5772E-07	5.3010E-06	6.1687E-05
Pile N.	13	13	1	1	1	1
MAXIMUM	1.5678E-03	-1.2461E-03	1.3510E-04	-2.5772E-07	5.3010E-06	6.1687E-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	1769.0	-288.31	31.853	-0.085896	-96.143	-852.75
2	2251.3	-286.84	32.011	-0.085896	-96.852	-849.83
3	2733.6	-341.72	38.418	-0.085896	-110.28	-961.22
4	1727.6	-267.61	29.563	-0.085896	-91.251	-809.01
5	2209.9	-267.18	29.814	-0.085896	-92.152	-808.25
6	2692.1	-330.88	37.176	-0.085896	-107.82	-940.24
7	1686.1	-267.52	29.521	-0.085896	-91.157	-809.13
8	2168.4	-267.10	29.773	-0.085896	-92.060	-808.41
9	2650.7	-331.15	37.166	-0.085896	-107.79	-941.16
10	1644.7	-268.03	29.545	-0.085896	-91.205	-810.56
11	2127.0	-267.62	29.797	-0.085896	-92.110	-809.84
12	2609.2	-331.48	37.163	-0.085896	-107.79	-942.18
13	1603.3	-288.60	31.745	-0.085896	-95.903	-854.67
14	2085.5	-287.12	31.902	-0.085896	-96.610	-851.74
15	2567.8	-342.61	38.351	-0.085896	-110.13	-964.48
MINIMUM	1603.3	-342.61	29.521	-0.085896	-110.28	-964.48
Pile N.	13	15	7	1	3	15
MAXIMUM	2733.6	-267.10	38.418	-0.085896	-91.157	-808.25
Pile N.	3	8	3	1	7	5

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

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	1.0126E-03	-1.2461E-03	1.3277E-04	-2.5772E-07	5.3010E-06	6.1687E-05
2	1.2902E-03	-1.2461E-03	1.3394E-04	-2.5772E-07	5.3010E-06	6.1687E-05
3	1.5678E-03	-1.2461E-03	1.3510E-04	-2.5772E-07	5.3010E-06	6.1687E-05
4	9.8874E-04	-1.2472E-03	1.3277E-04	-2.5772E-07	5.3010E-06	6.1687E-05
5	1.2663E-03	-1.2472E-03	1.3394E-04	-2.5772E-07	5.3010E-06	6.1687E-05
6	1.5439E-03	-1.2472E-03	1.3510E-04	-2.5772E-07	5.3010E-06	6.1687E-05
7	9.6489E-04	-1.2484E-03	1.3277E-04	-2.5772E-07	5.3010E-06	6.1687E-05
8	1.2425E-03	-1.2484E-03	1.3394E-04	-2.5772E-07	5.3010E-06	6.1687E-05
9	1.5201E-03	-1.2484E-03	1.3510E-04	-2.5772E-07	5.3010E-06	6.1687E-05
10	9.4103E-04	-1.2495E-03	1.3277E-04	-2.5772E-07	5.3010E-06	6.1687E-05
11	1.2186E-03	-1.2495E-03	1.3394E-04	-2.5772E-07	5.3010E-06	6.1687E-05
12	1.4962E-03	-1.2495E-03	1.3510E-04	-2.5772E-07	5.3010E-06	6.1687E-05
13	9.1718E-04	-1.2507E-03	1.3277E-04	-2.5772E-07	5.3010E-06	6.1687E-05
14	1.1948E-03	-1.2507E-03	1.3394E-04	-2.5772E-07	5.3010E-06	6.1687E-05
15	1.4724E-03	-1.2507E-03	1.3510E-04	-2.5772E-07	5.3010E-06	6.1687E-05
MINIMUM	9.1718E-04	-1.2507E-03	1.3277E-04	-2.5772E-07	5.3010E-06	6.1687E-05

## APPALTATORE:

Consorzio

Soci



## ITINERARIO NAPOLI – BARI

## PROGETTAZIONE:

Mandataria

Mandanti

RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

## PROGETTO ESECUTIVO

## RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO
IF28	01	E ZZ CL	VI0403 001	B	102 di 354

Pile N.	13	13	1	1	1	1
MAXIMUM	1.5678E-03	-1.2461E-03	1.3510E-04	-2.5772E-07	5.3010E-06	6.1687E-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	1769.0	-288.31	31.853	-0.085896	-96.143	-852.75
2	2251.3	-286.84	32.011	-0.085896	-96.852	-849.83
3	2733.6	-341.72	38.418	-0.085896	-110.28	-961.22
4	1727.6	-267.61	29.563	-0.085896	-91.251	-809.01
5	2209.9	-267.18	29.814	-0.085896	-92.152	-808.25
6	2692.1	-330.88	37.176	-0.085896	-107.82	-940.24
7	1686.1	-267.52	29.521	-0.085896	-91.157	-809.13
8	2168.4	-267.10	29.773	-0.085896	-92.060	-808.41
9	2650.7	-331.15	37.166	-0.085896	-107.80	-941.16
10	1644.7	-268.03	29.545	-0.085896	-91.205	-810.56
11	2127.0	-267.62	29.797	-0.085896	-92.110	-809.84
12	2609.2	-331.48	37.163	-0.085896	-107.79	-942.18
13	1603.3	-288.60	31.745	-0.085896	-95.903	-854.67
14	2085.5	-287.12	31.902	-0.085896	-96.610	-851.74
15	2567.8	-342.61	38.351	-0.085896	-110.13	-964.48
MINIMUM	1603.3	-342.61	29.521	-0.085896	-110.28	-964.48
Pile N.	13	15	7	1	3	15
MAXIMUM	2733.6	-267.10	38.418	-0.085896	-91.157	-808.25
Pile N.	3	8	3	1	7	5







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

1	3591.0
2	3855.4
3	4466.9
4	3434.7
5	3705.7
6	4379.7
7	3411.6
8	3682.7
9	4359.0
10	3392.5
11	3663.5
12	4338.6
13	3502.9
14	3767.2
15	4382.8
MINIMUM	3392.5
Pile N.	10
MAXIMUM	4466.9
Pile N.	3

\* EFFECTS FOR Laterally LOADED PILE \*

\* MINIMUM 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		z-DIR	y-DIR
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	-1.2461E-03	-3.8237E-06	-403.76	-96.143	-288.33	-10.812	-152.65	-2.6028	1001.1	7.8279E+06	7.8279E+06
x( M)	0.0000	9.9000	5.7600	0.0000	0.0000	7.9200	4.1400	9.0000	18.000	0.0000	0.0000
2	-1.2461E-03	-3.8657E-06	-402.27	-96.852	-286.86	-10.844	-151.38	-2.5839	1274.0	7.8279E+06	7.8279E+06
x( M)	0.0000	9.9000	5.7600	0.0000	0.0000	7.9200	4.1400	9.0000	18.000	0.0000	0.0000
3	-1.2461E-03	-3.6151E-06	-458.89	-110.28	-341.75	-13.743	-204.04	-4.2839	1546.9	7.8279E+06	7.8279E+06
x( M)	0.0000	9.3600	5.5800	0.0000	0.0000	7.5600	4.1400	9.0000	18.000	0.0000	0.0000
4	-1.2472E-03	-3.9370E-06	-381.86	-91.251	-267.62	-9.7885	-134.04	-2.2397	977.61	7.8279E+06	7.8279E+06
x( M)	0.0000	10.260	5.9400	0.0000	0.0000	8.1000	4.1400	10.620	18.000	0.0000	0.0000
5	-1.2472E-03	-3.9764E-06	-381.51	-92.152	-267.20	-9.8637	-133.73	-2.2566	1250.5	7.8279E+06	7.8279E+06
x( M)	0.0000	10.260	5.9400	0.0000	0.0000	8.1000	4.1400	10.620	18.000	0.0000	0.0000
6	-1.2472E-03	-3.6722E-06	-448.08	-107.82	-330.91	-13.155	-193.06	-3.9538	1523.4	7.8279E+06	7.8279E+06
x( M)	0.0000	9.5400	5.5800	0.0000	0.0000	7.5600	4.1400	9.0000	18.000	0.0000	0.0000
7	-1.2484E-03	-3.9385E-06	-381.79	-91.157	-267.53	-9.7693	-133.82	-2.2350	954.16	7.8279E+06	7.8279E+06
x( M)	0.0000	10.260	5.9400	0.0000	0.0000	8.1000	4.1400	10.620	18.000	0.0000	0.0000
8	-1.2484E-03	-3.9777E-06	-381.46	-92.060	-267.12	-9.8451	-133.52	-2.2521	1227.1	7.8279E+06	7.8279E+06
x( M)	0.0000	10.260	5.9400	0.0000	0.0000	8.1000	4.1400	10.620	18.000	0.0000	0.0000
9	-1.2484E-03	-3.6719E-06	-448.40	-107.80	-331.18	-13.150	-193.13	-3.9512	1500.0	7.8279E+06	7.8279E+06
x( M)	0.0000	9.5400	5.5800	0.0000	0.0000	7.5600	4.1400	9.0000	18.000	0.0000	0.0000
10	-1.2495E-03	-3.9364E-06	-382.38	-91.205	-268.05	-9.7800	-134.12	-2.2379	930.71	7.8279E+06	7.8279E+06
x( M)	0.0000	10.260	5.9400	0.0000	0.0000	8.1000	4.1400	10.620	18.000	0.0000	0.0000
11	-1.2495E-03	-3.9757E-06	-382.06	-92.110	-267.64	-9.8559	-133.82	-2.2550	1203.6	7.8279E+06	7.8279E+06
x( M)	0.0000	10.260	5.9400	0.0000	0.0000	8.1000	4.1400	10.620	18.000	0.0000	0.0000
12	-1.2495E-03	-3.6713E-06	-448.76	-107.79	-331.51	-13.148	-193.25	-3.9500	1476.5	7.8279E+06	7.8279E+06
x( M)	0.0000	9.5400	5.5800	0.0000	0.0000	7.5600	4.1400	9.0000	18.000	0.0000	0.0000
13	-1.2507E-03	-3.8247E-06	-404.14	-95.903	-288.61	-10.761	-152.24	-2.5718	907.26	7.8279E+06	7.8279E+06
x( M)	0.0000	9.9000	5.7600	0.0000	0.0000	7.9200	4.1400	9.0000	18.000	0.0000	0.0000
14	-1.2507E-03	-3.8676E-06	-402.64	-96.610	-287.14	-10.792	-150.97	-2.5526	1180.2	7.8279E+06	7.8279E+06
x( M)	0.0000	10.080	5.7600	0.0000	0.0000	7.9200	4.1400	9.0000	18.000	0.0000	0.0000

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   		
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>		

15	-1.2507E-03	-3.6147E-06	-459.95	-110.13	-342.63	-13.709	-204.09	-4.2658	1453.1	7.8279E+06	7.8279E+06
x( M)	0.0000	9.3600	5.5800	0.0000	0.0000	7.5600	4.1400	9.0000	18.000	0.0000	0.0000
Min. Pile N.	-1.2507E-03	-3.9777E-06	-459.95	-110.28	-342.63	-13.743	-204.09	-4.2839	907.26	7.8279E+06	7.8279E+06
	13	8	15	3	15	3	15	3	13	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2	KN- M**2	KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	3.5523E-05	1.3278E-04	852.75	43.442	100.46	31.855	24.514	16.642	3591.0	7.8279E+06	7.8279E+06
x( M)	9.9000	0.0000	0.0000	5.9400	7.9200	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
2	3.5596E-05	1.3393E-04	849.83	43.689	99.854	32.013	24.139	16.661	3855.4	7.8279E+06	7.8279E+06
x( M)	9.9000	0.0000	0.0000	5.9400	7.9200	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
3	3.2953E-05	1.3509E-04	961.22	50.290	125.31	38.422	39.206	22.657	4466.9	7.8279E+06	7.8279E+06
x( M)	9.3600	0.0000	0.0000	5.5800	7.5600	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
4	3.6597E-05	1.3278E-04	809.01	41.040	91.059	29.565	20.763	14.602	3434.7	7.8279E+06	7.8279E+06
x( M)	10.260	0.0000	0.0000	5.9400	8.1000	0.0000	10.620	4.1400	0.0000	0.0000	0.0000
5	3.6630E-05	1.3393E-04	808.25	41.374	90.934	29.816	20.730	14.708	3705.7	7.8279E+06	7.8279E+06
x( M)	10.260	0.0000	0.0000	5.9400	8.1000	0.0000	10.620	4.1400	0.0000	0.0000	0.0000
6	3.3489E-05	1.3509E-04	940.24	49.034	120.16	37.179	36.279	21.417	4379.7	7.8279E+06	7.8279E+06
x( M)	9.5400	0.0000	0.0000	5.5800	7.5600	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
7	3.6648E-05	1.3278E-04	809.13	40.991	90.973	29.523	20.741	14.562	3411.6	7.8279E+06	7.8279E+06
x( M)	10.260	0.0000	0.0000	5.9400	8.1000	0.0000	10.620	4.1400	0.0000	0.0000	0.0000
8	3.6680E-05	1.3393E-04	808.41	41.327	90.855	29.775	20.710	14.669	3682.7	7.8279E+06	7.8279E+06
x( M)	10.260	0.0000	0.0000	5.9400	8.1000	0.0000	10.620	4.1400	0.0000	0.0000	0.0000
9	3.3519E-05	1.3509E-04	941.16	49.020	120.23	37.170	36.290	21.403	4359.0	7.8279E+06	7.8279E+06
x( M)	9.5400	0.0000	0.0000	5.5800	7.5600	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
10	3.6664E-05	1.3278E-04	810.56	41.015	91.159	29.547	20.788	14.580	3392.5	7.8279E+06	7.8279E+06
x( M)	10.260	0.0000	0.0000	5.9400	8.1000	0.0000	10.620	4.1400	0.0000	0.0000	0.0000
11	3.6696E-05	1.3393E-04	809.84	41.351	91.042	29.799	20.757	14.687	3663.5	7.8279E+06	7.8279E+06
x( M)	10.260	0.0000	0.0000	5.9400	8.1000	0.0000	10.620	4.1400	0.0000	0.0000	0.0000
12	3.3547E-05	1.3509E-04	942.18	49.013	120.33	37.166	36.315	21.394	4338.6	7.8279E+06	7.8279E+06
x( M)	9.5400	0.0000	0.0000	5.5800	7.5600	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
13	3.5676E-05	1.3278E-04	854.67	43.325	100.39	31.747	24.319	16.529	3502.9	7.8279E+06	7.8279E+06
x( M)	9.9000	0.0000	0.0000	5.9400	7.9200	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
14	3.5747E-05	1.3393E-04	851.74	43.570	99.778	31.904	23.942	16.547	3767.2	7.8279E+06	7.8279E+06
x( M)	9.9000	0.0000	0.0000	5.9400	7.9200	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
15	3.3082E-05	1.3509E-04	964.48	50.209	125.50	38.354	39.195	22.569	4382.8	7.8279E+06	7.8279E+06
x( M)	9.3600	0.0000	0.0000	5.5800	7.5600	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
Max. Pile N.	3.6696E-05	1.3509E-04	964.48	50.290	125.50	38.422	39.206	22.657	4466.9	7.8279E+06	7.8279E+06
	11	3	15	3	15	3	3	3	3	1	1

LOAD CASE : 11  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp







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	0.6016	1.0000
2	0.5924	1.0000
3	0.8661	1.0000
4	0.5000	1.0000
5	0.4952	1.0000
6	0.7956	1.0000
7	0.4971	1.0000
8	0.4925	1.0000
9	0.7944	1.0000
10	0.4981	1.0000
11	0.4935	1.0000
12	0.7944	1.0000
13	0.5845	1.0000
14	0.5753	1.0000
15	0.8543	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
32693.0	-2361.54	524.152
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-299.787	5233.09	1081.53

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>				
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>					
<b>COMMESSA</b> <b>IF28</b>	<b>LOTTO</b> <b>01</b>	<b>CODIFICA</b> <b>E ZZ CL</b>	<b>DOCUMENTO</b> <b>VI0403 001</b>	<b>REV.</b> <b>B</b>	<b>FOGLIO</b> <b>104 di 354</b>

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL , M 1.24888E-03	HORIZONTAL Y, M -5.88816E-04	HORIZONTAL Z, M 1.34612E-04
ANGLE ROT. X,RAD -8.17295E-07	ANGLE ROT. Y,RAD 6.39816E-06	ANGLE ROT. Z,RAD 2.28806E-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	1.2035E-03	-5.8146E-04	1.3093E-04	-8.1729E-07	6.3982E-06	2.2881E-05
2	1.3065E-03	-5.8146E-04	1.3461E-04	-8.1729E-07	6.3982E-06	2.2881E-05
3	1.4094E-03	-5.8146E-04	1.3829E-04	-8.1729E-07	6.3982E-06	2.2881E-05
4	1.1747E-03	-5.8514E-04	1.3093E-04	-8.1729E-07	6.3982E-06	2.2881E-05
5	1.2777E-03	-5.8514E-04	1.3461E-04	-8.1729E-07	6.3982E-06	2.2881E-05
6	1.3806E-03	-5.8514E-04	1.3829E-04	-8.1729E-07	6.3982E-06	2.2881E-05
7	1.1459E-03	-5.8882E-04	1.3093E-04	-8.1729E-07	6.3982E-06	2.2881E-05
8	1.2489E-03	-5.8882E-04	1.3461E-04	-8.1729E-07	6.3982E-06	2.2881E-05
9	1.3518E-03	-5.8882E-04	1.3829E-04	-8.1729E-07	6.3982E-06	2.2881E-05
10	1.1171E-03	-5.9249E-04	1.3093E-04	-8.1729E-07	6.3982E-06	2.2881E-05
11	1.2201E-03	-5.9249E-04	1.3461E-04	-8.1729E-07	6.3982E-06	2.2881E-05
12	1.3231E-03	-5.9249E-04	1.3829E-04	-8.1729E-07	6.3982E-06	2.2881E-05
13	1.0883E-03	-5.9617E-04	1.3093E-04	-8.1729E-07	6.3982E-06	2.2881E-05
14	1.1913E-03	-5.9617E-04	1.3461E-04	-8.1729E-07	6.3982E-06	2.2881E-05
15	1.2943E-03	-5.9617E-04	1.3829E-04	-8.1729E-07	6.3982E-06	2.2881E-05
MINIMUM	1.0883E-03	-5.9617E-04	1.3093E-04	-8.1729E-07	6.3982E-06	2.2881E-05
Pile N.	13	13	1	1	1	1
MAXIMUM	1.4094E-03	-5.8146E-04	1.3829E-04	-8.1729E-07	6.3982E-06	2.2881E-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	2100.7	-153.51	33.383	-0.2724	-97.018	-454.60
2	2279.6	-152.46	34.253	-0.2724	-100.03	-452.44
3	2458.5	-178.87	41.540	-0.2724	-115.97	-505.76
4	2050.7	-142.79	30.797	-0.2724	-91.560	-433.06
5	2229.6	-142.16	31.682	-0.2724	-94.585	-431.74
6	2408.4	-173.77	40.054	-0.2724	-113.04	-497.02
7	2000.7	-143.37	30.700	-0.2724	-91.349	-435.41
8	2179.5	-142.78	31.591	-0.2724	-94.385	-434.15
9	2358.4	-174.80	40.006	-0.2724	-112.94	-500.34
10	1950.6	-144.44	30.709	-0.2724	-91.363	-438.80
11	2129.5	-143.84	31.601	-0.2724	-94.401	-437.53
12	2308.4	-175.94	39.984	-0.2724	-112.89	-503.88
13	1900.6	-155.67	32.895	-0.2724	-95.980	-463.73
14	2079.5	-154.57	33.747	-0.2724	-98.946	-461.47
15	2258.4	-182.55	41.209	-0.2724	-115.29	-518.19
MINIMUM	1900.6	-182.55	30.700	-0.2724	-115.97	-518.19
Pile N.	13	15	7	1	3	15
MAXIMUM	2458.5	-142.16	41.540	-0.2724	-91.349	-431.74
Pile N.	3	5	3	1	7	5

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
1	1.2035E-03	-5.8146E-04	1.3093E-04	-8.1729E-07	6.3982E-06	2.2881E-05
2	1.3065E-03	-5.8146E-04	1.3461E-04	-8.1729E-07	6.3982E-06	2.2881E-05
3	1.4094E-03	-5.8146E-04	1.3829E-04	-8.1729E-07	6.3982E-06	2.2881E-05
4	1.1747E-03	-5.8514E-04	1.3093E-04	-8.1729E-07	6.3982E-06	2.2881E-05
5	1.2777E-03	-5.8514E-04	1.3461E-04	-8.1729E-07	6.3982E-06	2.2881E-05
6	1.3806E-03	-5.8514E-04	1.3829E-04	-8.1729E-07	6.3982E-06	2.2881E-05
7	1.1459E-03	-5.8882E-04	1.3093E-04	-8.1729E-07	6.3982E-06	2.2881E-05
8	1.2489E-03	-5.8882E-04	1.3461E-04	-8.1729E-07	6.3982E-06	2.2881E-05
9	1.3518E-03	-5.8882E-04	1.3829E-04	-8.1729E-07	6.3982E-06	2.2881E-05
10	1.1171E-03	-5.9249E-04	1.3093E-04	-8.1729E-07	6.3982E-06	2.2881E-05
11	1.2201E-03	-5.9249E-04	1.3461E-04	-8.1729E-07	6.3982E-06	2.2881E-05
12	1.3231E-03	-5.9249E-04	1.3829E-04	-8.1729E-07	6.3982E-06	2.2881E-05
13	1.0883E-03	-5.9617E-04	1.3093E-04	-8.1729E-07	6.3982E-06	2.2881E-05
14	1.1913E-03	-5.9617E-04	1.3461E-04	-8.1729E-07	6.3982E-06	2.2881E-05
15	1.2943E-03	-5.9617E-04	1.3829E-04	-8.1729E-07	6.3982E-06	2.2881E-05
MINIMUM	1.0883E-03	-5.9617E-04	1.3093E-04	-8.1729E-07	6.3982E-06	2.2881E-05



APPALTATORE:

Consorzio

Soci



ITINERARIO NAPOLI – BARI

PROGETTAZIONE:

Mandataria

Mandanti



RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

PROGETTO ESECUTIVO

RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO
IF28	01	E ZZ CL	VI0403 001	B	105 di 354

Pile N.	13	13	1	1	1	1
MAXIMUM	1.4094E-03	-5.8146E-04	1.3829E-04	-8.1729E-07	6.3982E-06	2.2881E-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	2100.7	-153.51	33.383	-0.2724	-97.018	-454.60
2	2279.6	-152.46	34.253	-0.2724	-100.03	-452.44
3	2458.5	-178.87	41.540	-0.2724	-115.97	-505.76
4	2050.7	-142.79	30.797	-0.2724	-91.560	-433.06
5	2229.6	-142.16	31.682	-0.2724	-94.585	-431.74
6	2408.4	-173.77	40.054	-0.2724	-113.04	-497.02
7	2000.7	-143.37	30.700	-0.2724	-91.349	-435.41
8	2179.5	-142.78	31.591	-0.2724	-94.385	-434.15
9	2358.4	-174.80	40.006	-0.2724	-112.94	-500.34
10	1950.6	-144.44	30.709	-0.2724	-91.363	-438.80
11	2129.5	-143.84	31.601	-0.2724	-94.401	-437.53
12	2308.4	-175.94	39.984	-0.2724	-112.89	-503.88
13	1900.6	-155.67	32.895	-0.2724	-95.980	-463.73
14	2079.5	-154.57	33.747	-0.2724	-98.946	-461.47
15	2258.4	-182.55	41.209	-0.2724	-115.29	-518.19
MINIMUM	1900.6	-182.55	30.700	-0.2724	-115.97	-518.19
Pile N.	13	15	7	1	3	15
MAXIMUM	2458.5	-142.16	41.540	-0.2724	-91.349	-431.74
Pile N.	3	5	3	1	7	5







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

1	2591.7
2	2688.4
3	2957.2
4	2496.3
5	2595.6
6	2901.2
7	2474.8
8	2574.3
9	2882.6
10	2456.5
11	2555.9
12	2864.7
13	2504.8
14	2601.2
15	2880.1
MINIMUM	2456.5
Pile N.	10
MAXIMUM	2957.2
Pile N.	3

\* EFFECTS FOR Laterally LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS	FLEX. RIG. z-DIR	FLEX. RIG. y-DIR
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2	KN- M**2	KN- M**2
1	-5.8146E-04	-3.9824E-06	-206.44	-97.018	-153.52	-11.505	-100.15	-3.1431	1188.8	7.8279E+06	7.8279E+06
x( M)	0.0000	9.7200	5.5800	0.0000	0.0000	7.5600	4.1400	9.0000	18.000	0.0000	0.0000
2	-5.8146E-04	-4.1126E-06	-205.28	-100.03	-152.47	-11.726	-98.938	-3.1713	1290.0	7.8279E+06	7.8279E+06
x( M)	0.0000	9.7200	5.5800	0.0000	0.0000	7.5600	4.1400	9.0000	18.000	0.0000	0.0000
3	-5.8146E-04	-3.9542E-06	-234.64	-115.97	-178.89	-15.146	-130.29	-4.8357	1391.2	7.8279E+06	7.8279E+06
x( M)	0.0000	9.1800	5.4000	0.0000	0.0000	7.2000	4.1400	9.0000	18.000	0.0000	0.0000
4	-5.8514E-04	-4.1012E-06	-194.09	-91.560	-142.80	-10.268	-87.624	-2.4560	1160.4	7.8279E+06	7.8279E+06
x( M)	0.0000	9.9000	5.7600	0.0000	0.0000	7.9200	4.1400	9.0000	18.000	0.0000	0.0000
5	-5.8514E-04	-4.2271E-06	-193.41	-94.585	-142.17	-10.511	-86.930	-2.4876	1261.7	7.8279E+06	7.8279E+06
x( M)	0.0000	9.9000	5.7600	0.0000	0.0000	7.9200	4.1400	9.0000	18.000	0.0000	0.0000
6	-5.8514E-04	-4.0193E-06	-229.36	-113.04	-173.79	-14.404	-123.10	-4.4779	1362.9	7.8279E+06	7.8279E+06
x( M)	0.0000	9.1800	5.4000	0.0000	0.0000	7.3800	4.1400	9.0000	18.000	0.0000	0.0000
7	-5.8882E-04	-4.1028E-06	-194.89	-91.349	-143.38	-10.229	-87.585	-2.4324	1132.1	7.8279E+06	7.8279E+06
x( M)	0.0000	9.9000	5.7600	0.0000	0.0000	7.9200	4.1400	9.0000	18.000	0.0000	0.0000
8	-5.8882E-04	-4.2282E-06	-194.24	-94.385	-142.79	-10.474	-86.929	-2.4655	1233.4	7.8279E+06	7.8279E+06
x( M)	0.0000	9.9000	5.7600	0.0000	0.0000	7.9200	4.1400	9.0000	18.000	0.0000	0.0000
9	-5.8882E-04	-4.0186E-06	-230.63	-112.94	-174.82	-14.385	-123.46	-4.4691	1334.6	7.8279E+06	7.8279E+06
x( M)	0.0000	9.1800	5.4000	0.0000	0.0000	7.3800	4.1400	9.0000	18.000	0.0000	0.0000
10	-5.9249E-04	-4.1002E-06	-196.23	-91.363	-144.45	-10.238	-88.061	-2.4370	1103.8	7.8279E+06	7.8279E+06
x( M)	0.0000	9.9000	5.7600	0.0000	0.0000	7.9200	4.1400	9.0000	18.000	0.0000	0.0000
11	-5.9249E-04	-4.2256E-06	-195.58	-94.401	-143.85	-10.483	-87.404	-2.4703	1205.1	7.8279E+06	7.8279E+06
x( M)	0.0000	9.9000	5.7600	0.0000	0.0000	7.9200	4.1400	9.0000	18.000	0.0000	0.0000
12	-5.9249E-04	-4.0169E-06	-232.03	-112.89	-175.96	-14.379	-123.96	-4.4666	1306.3	7.8279E+06	7.8279E+06
x( M)	0.0000	9.1800	5.4000	0.0000	0.0000	7.3800	4.1400	9.0000	18.000	0.0000	0.0000
13	-5.9617E-04	-3.9987E-06	-209.35	-95.980	-155.68	-11.285	-99.604	-3.0235	1075.5	7.8279E+06	7.8279E+06
x( M)	0.0000	9.7200	5.5800	0.0000	0.0000	7.7400	4.1400	9.0000	18.000	0.0000	0.0000
14	-5.9617E-04	-4.1279E-06	-208.12	-98.946	-154.59	-11.509	-98.369	-3.0467	1176.8	7.8279E+06	7.8279E+06
x( M)	0.0000	9.7200	5.5800	0.0000	0.0000	7.7400	4.1400	9.0000	18.000	0.0000	0.0000

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   		
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>		

15	-5.9617E-04	-3.9605E-06	-239.32	-115.29	-182.57	-14.991	-131.13	-4.7692	1278.0	7.8279E+06	7.8279E+06
x( M)	0.0000	9.1800	5.4000	0.0000	0.0000	7.2000	4.1400	9.0000	18.000	0.0000	0.0000
Min. Pile N.	-5.9617E-04	-4.2282E-06	-239.32	-115.97	-182.57	-15.146	-131.13	-4.8357	1075.5	7.8279E+06	7.8279E+06
	13	8	15	3	15	3	15	3	13	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-Dir	DISPL. z-Dir	MOMENT z-Dir	MOMENT y-Dir	SHEAR y-Dir	SHEAR z-Dir	SOIL REACT y-Dir	SOIL REACT z-Dir	TOTAL STRESS	FLEX. RIG. z-Dir	FLEX. RIG. y-Dir
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2	KN- M**2	KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	1.7863E-05	1.3093E-04	454.60	46.070	51.524	33.385	13.985	22.050	2591.7	7.8279E+06	7.8279E+06
x( M)	9.7200	0.0000	0.0000	5.5800	7.7400	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
2	1.7915E-05	1.3461E-04	452.44	47.162	51.062	34.256	13.716	22.467	2688.4	7.8279E+06	7.8279E+06
x( M)	9.7200	0.0000	0.0000	5.5800	7.7400	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
3	1.6755E-05	1.3829E-04	505.76	55.408	64.102	41.543	20.468	30.499	2957.2	7.8279E+06	7.8279E+06
x( M)	9.1800	0.0000	0.0000	5.4000	7.2000	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
4	1.8491E-05	1.3093E-04	433.06	43.048	46.328	30.799	10.927	19.155	2496.3	7.8279E+06	7.8279E+06
x( M)	9.9000	0.0000	0.0000	5.5800	7.9200	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
5	1.8513E-05	1.3461E-04	431.74	44.138	46.062	31.685	10.768	19.600	2595.6	7.8279E+06	7.8279E+06
x( M)	9.9000	0.0000	0.0000	5.5800	7.9200	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
6	1.7129E-05	1.3829E-04	497.02	53.827	61.392	40.058	19.059	28.616	2901.2	7.8279E+06	7.8279E+06
x( M)	9.1800	0.0000	0.0000	5.4000	7.3800	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
7	1.8617E-05	1.3093E-04	435.41	42.935	46.451	30.703	10.886	19.016	2474.8	7.8279E+06	7.8279E+06
x( M)	9.9000	0.0000	0.0000	5.5800	7.9200	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
8	1.8637E-05	1.3461E-04	434.15	44.041	46.198	31.593	10.736	19.466	2574.3	7.8279E+06	7.8279E+06
x( M)	9.9000	0.0000	0.0000	5.7600	7.9200	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
9	1.7237E-05	1.3829E-04	500.34	53.776	61.711	40.009	19.144	28.505	2882.6	7.8279E+06	7.8279E+06
x( M)	9.1800	0.0000	0.0000	5.4000	7.3800	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
10	1.8726E-05	1.3093E-04	438.80	42.950	46.792	30.711	10.974	18.990	2456.5	7.8279E+06	7.8279E+06
x( M)	9.9000	0.0000	0.0000	5.5800	7.9200	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
11	1.8746E-05	1.3461E-04	437.53	44.059	46.538	31.603	10.823	19.440	2555.9	7.8279E+06	7.8279E+06
x( M)	9.9000	0.0000	0.0000	5.7600	7.9200	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
12	1.7341E-05	1.3829E-04	503.88	53.754	62.086	39.987	19.257	28.427	2864.7	7.8279E+06	7.8279E+06
x( M)	9.1800	0.0000	0.0000	5.4000	7.3800	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
13	1.8400E-05	1.3093E-04	463.73	45.536	51.920	32.897	13.783	21.340	2504.8	7.8279E+06	7.8279E+06
x( M)	9.7200	0.0000	0.0000	5.5800	7.7400	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
14	1.8446E-05	1.3461E-04	461.47	46.603	51.430	33.749	13.501	21.736	2601.2	7.8279E+06	7.8279E+06
x( M)	9.7200	0.0000	0.0000	5.5800	7.7400	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
15	1.7222E-05	1.3829E-04	518.19	55.068	65.123	41.212	20.712	29.871	2880.1	7.8279E+06	7.8279E+06
x( M)	9.1800	0.0000	0.0000	5.4000	7.3800	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
Max. Pile N.	1.8746E-05	1.3829E-04	518.19	55.408	65.123	41.543	20.712	30.499	2957.2	7.8279E+06	7.8279E+06
	11	3	15	3	15	3	15	3	3	1	1

LOAD CASE : 12  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp







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	0.5953	1.0000
2	0.5875	1.0000
3	0.8661	1.0000
4	0.4983	1.0000
5	0.4951	1.0000
6	0.7992	1.0000
7	0.4961	1.0000
8	0.4931	1.0000
9	0.7984	1.0000
10	0.4971	1.0000
11	0.4941	1.0000
12	0.7984	1.0000
13	0.5845	1.0000
14	0.5767	1.0000
15	0.8587	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
28827.0	-2914.56	498.587
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-49.6459	4534.33	-1014.09

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>							<b>COMMESSA</b> <b>IF28</b>

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL , M 1.10053E-03	HORIZONTAL Y, M -7.21561E-04	HORIZONTAL Z, M 1.29537E-04
ANGLE ROT. X,RAD 2.52977E-07	ANGLE ROT. Y,RAD 5.68336E-06	ANGLE ROT. Z,RAD 2.20568E-05

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

PILE GROUP *****	DISP. X, M *****	DISP. Y, M *****	DISP. Z, M *****	ROT. X,RAD *****	ROT. Y,RAD *****	ROT. Z,RAD *****
1	1.0524E-03	-7.2384E-04	1.3067E-04	2.5298E-07	5.6834E-06	2.2057E-05
2	1.1517E-03	-7.2384E-04	1.2954E-04	2.5298E-07	5.6834E-06	2.2057E-05
3	1.2509E-03	-7.2384E-04	1.2840E-04	2.5298E-07	5.6834E-06	2.2057E-05
4	1.0268E-03	-7.2270E-04	1.3067E-04	2.5298E-07	5.6834E-06	2.2057E-05
5	1.1261E-03	-7.2270E-04	1.2954E-04	2.5298E-07	5.6834E-06	2.2057E-05
6	1.2254E-03	-7.2270E-04	1.2840E-04	2.5298E-07	5.6834E-06	2.2057E-05
7	1.0013E-03	-7.2156E-04	1.3067E-04	2.5298E-07	5.6834E-06	2.2057E-05
8	1.1005E-03	-7.2156E-04	1.2954E-04	2.5298E-07	5.6834E-06	2.2057E-05
9	1.1998E-03	-7.2156E-04	1.2840E-04	2.5298E-07	5.6834E-06	2.2057E-05
10	9.7570E-04	-7.2042E-04	1.3067E-04	2.5298E-07	5.6834E-06	2.2057E-05
11	1.0750E-03	-7.2042E-04	1.2954E-04	2.5298E-07	5.6834E-06	2.2057E-05
12	1.1742E-03	-7.2042E-04	1.2840E-04	2.5298E-07	5.6834E-06	2.2057E-05
13	9.5012E-04	-7.1928E-04	1.3067E-04	2.5298E-07	5.6834E-06	2.2057E-05
14	1.0494E-03	-7.1928E-04	1.2954E-04	2.5298E-07	5.6834E-06	2.2057E-05
15	1.1486E-03	-7.1928E-04	1.2840E-04	2.5298E-07	5.6834E-06	2.2057E-05
MINIMUM	9.5012E-04	-7.2384E-04	1.2840E-04	2.5298E-07	5.6834E-06	2.2057E-05
Pile N.	13	1	3	1	1	1
MAXIMUM	1.2509E-03	-7.1928E-04	1.3067E-04	2.5298E-07	5.6834E-06	2.2057E-05
Pile N.	3	13	1	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP *****	FOR. X, KN *****	FOR. Y, KN *****	FOR. Z, KN *****	MOM X, KN- M *****	MOM Y, KN- M *****	MOM Z, KN- M *****
1	1838.2	-191.66	33.015	0.084317	-97.627	-580.83
2	2010.7	-190.57	32.492	0.084317	-96.177	-578.58
3	2183.1	-224.26	37.956	0.084317	-106.83	-646.94
4	1793.8	-177.45	30.581	0.084317	-92.471	-550.27
5	1966.2	-176.96	30.184	0.084317	-91.280	-549.22
6	2138.7	-216.53	36.690	0.084317	-104.34	-631.28
7	1749.4	-176.84	30.529	0.084317	-92.357	-548.60
8	1921.8	-176.37	30.137	0.084317	-91.178	-547.63
9	2094.2	-216.11	36.683	0.084317	-104.33	-630.05
10	1704.9	-176.73	30.563	0.084317	-92.429	-548.01
11	1877.4	-176.26	30.171	0.084317	-91.250	-547.03
12	2049.8	-215.78	36.691	0.084317	-104.35	-629.00
13	1660.5	-189.02	32.784	0.084317	-97.145	-573.85
14	1832.9	-187.93	32.262	0.084317	-95.696	-571.59
15	2005.4	-222.09	37.849	0.084317	-106.63	-641.05
MINIMUM	1660.5	-224.26	30.137	0.084317	-106.83	-646.94
Pile N.	13	3	8	1	3	3
MAXIMUM	2183.1	-176.26	37.956	0.084317	-91.178	-547.03
Pile N.	3	11	3	1	8	11

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

PILE GROUP *****	DISP. x, M *****	DISP. y, M *****	DISP. z, M *****	ROT. x,RAD *****	ROT. y,RAD *****	ROT. z,RAD *****
1	1.0524E-03	-7.2384E-04	1.3067E-04	2.5298E-07	5.6834E-06	2.2057E-05
2	1.1517E-03	-7.2384E-04	1.2954E-04	2.5298E-07	5.6834E-06	2.2057E-05
3	1.2509E-03	-7.2384E-04	1.2840E-04	2.5298E-07	5.6834E-06	2.2057E-05
4	1.0268E-03	-7.2270E-04	1.3067E-04	2.5298E-07	5.6834E-06	2.2057E-05
5	1.1261E-03	-7.2270E-04	1.2954E-04	2.5298E-07	5.6834E-06	2.2057E-05
6	1.2254E-03	-7.2270E-04	1.2840E-04	2.5298E-07	5.6834E-06	2.2057E-05
7	1.0013E-03	-7.2156E-04	1.3067E-04	2.5298E-07	5.6834E-06	2.2057E-05
8	1.1005E-03	-7.2156E-04	1.2954E-04	2.5298E-07	5.6834E-06	2.2057E-05
9	1.1998E-03	-7.2156E-04	1.2840E-04	2.5298E-07	5.6834E-06	2.2057E-05
10	9.7570E-04	-7.2042E-04	1.3067E-04	2.5298E-07	5.6834E-06	2.2057E-05
11	1.0750E-03	-7.2042E-04	1.2954E-04	2.5298E-07	5.6834E-06	2.2057E-05
12	1.1742E-03	-7.2042E-04	1.2840E-04	2.5298E-07	5.6834E-06	2.2057E-05
13	9.5012E-04	-7.1928E-04	1.3067E-04	2.5298E-07	5.6834E-06	2.2057E-05
14	1.0494E-03	-7.1928E-04	1.2954E-04	2.5298E-07	5.6834E-06	2.2057E-05
15	1.1486E-03	-7.1928E-04	1.2840E-04	2.5298E-07	5.6834E-06	2.2057E-05
MINIMUM	9.5012E-04	-7.2384E-04	1.2840E-04	2.5298E-07	5.6834E-06	2.2057E-05

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>		COMMESSA <b>IF28</b>	LOTTO <b>01</b>	CODIFICA <b>E ZZ CL</b>	DOCUMENTO <b>VI0403 001</b>	REV. <b>B</b>	FOGLIO <b>108 di 354</b>

Pile N.	13	1	3	1	1	1
MAXIMUM	1.2509E-03	-7.1928E-04	1.3067E-04	2.5298E-07	5.6834E-06	2.2057E-05
Pile N.	3	13	1	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	1838.2	-191.66	33.015	0.084317	-97.627	-580.83
2	2010.7	-190.57	32.492	0.084317	-96.177	-578.58
3	2183.1	-224.26	37.956	0.084317	-106.83	-646.94
4	1793.8	-177.45	30.581	0.084317	-92.471	-550.27
5	1966.2	-176.96	30.184	0.084317	-91.280	-549.22
6	2138.7	-216.53	36.690	0.084317	-104.34	-631.28
7	1749.4	-176.84	30.529	0.084317	-92.357	-548.60
8	1921.8	-176.37	30.137	0.084317	-91.178	-547.63
9	2094.2	-216.11	36.683	0.084317	-104.33	-630.05
10	1704.9	-176.73	30.563	0.084317	-92.429	-548.01
11	1877.4	-176.26	30.171	0.084317	-91.250	-547.03
12	2049.8	-215.78	36.691	0.084317	-104.35	-629.00
13	1660.5	-189.02	32.784	0.084317	-97.145	-573.85
14	1832.9	-187.93	32.262	0.084317	-95.696	-571.59
15	2005.4	-222.09	37.849	0.084317	-106.63	-641.05
MINIMUM	1660.5	-224.26	30.137	0.084317	-106.83	-646.94
Pile N.	13	3	8	1	3	3
MAXIMUM	2183.1	-176.26	37.956	0.084317	-91.178	-547.03
Pile N.	3	11	3	1	8	11

PILE GROUP	STRESS, KN/ M**2
1	2817.8
2	2908.0
3	3214.3
4	2699.1
5	2793.0
6	3141.3
7	2669.0
8	2763.0
9	3112.5
10	2642.1
11	2736.2
12	3084.2
13	2696.2
14	2786.3
15	3096.1
MINIMUM	2642.1
Pile N.	10
MAXIMUM	3214.3
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	-7.2384E-04	-3.9411E-06	-253.41	-97.627	-191.67	-11.272	-114.46	-2.9834	1040.2	7.8279E+06	7.8279E+06
x( M)	0.0000	9.7200	5.7600	0.0000	0.0000	7.7400	4.1400	9.0000	18.000	0.0000	0.0000
2	-7.2384E-04	-3.9138E-06	-252.28	-96.177	-190.58	-11.083	-113.34	-2.9073	1137.8	7.8279E+06	7.8279E+06
x( M)	0.0000	9.7200	5.7600	0.0000	0.0000	7.7400	4.1400	9.0000	18.000	0.0000	0.0000
3	-7.2384E-04	-3.6161E-06	-288.82	-106.83	-224.28	-13.813	-150.66	-4.3987	1235.4	7.8279E+06	7.8279E+06
x( M)	0.0000	9.1800	5.4000	0.0000	0.0000	7.3800	4.1400	9.0000	18.000	0.0000	0.0000
4	-7.2270E-04	-4.0519E-06	-237.63	-92.471	-177.47	-10.125	-100.07	-2.3205	1015.1	7.8279E+06	7.8279E+06
x( M)	0.0000	10.080	5.7600	0.0000	0.0000	7.9200	4.1400	9.0000	18.000	0.0000	0.0000
5	-7.2270E-04	-4.0202E-06	-237.08	-91.280	-176.97	-9.9956	-99.599	-2.2786	1112.7	7.8279E+06	7.8279E+06
x( M)	0.0000	10.080	5.7600	0.0000	0.0000	7.9200	4.1400	9.0000	18.000	0.0000	0.0000
6	-7.2270E-04	-3.6706E-06	-280.35	-104.34	-216.55	-13.185	-142.01	-4.0810	1210.2	7.8279E+06	7.8279E+06
x( M)	0.0000	9.3600	5.4000	0.0000	0.0000	7.3800	4.1400	9.0000	18.000	0.0000	0.0000
7	-7.2156E-04	-4.0555E-06	-236.89	-92.357	-176.85	-10.099	-99.636	-2.3052	989.94	7.8279E+06	7.8279E+06
x( M)	0.0000	10.080	5.7600	0.0000	0.0000	7.9200	4.1400	9.0000	18.000	0.0000	0.0000
8	-7.2156E-04	-4.0235E-06	-236.37	-91.178	-176.39	-9.9716	-99.191	-2.2648	1087.5	7.8279E+06	7.8279E+06
x( M)	0.0000	10.080	5.7600	0.0000	0.0000	7.9200	4.1400	9.0000	18.000	0.0000	0.0000
9	-7.2156E-04	-3.6718E-06	-279.85	-104.33	-216.13	-13.179	-141.77	-4.0781	1185.1	7.8279E+06	7.8279E+06
x( M)	0.0000	9.3600	5.4000	0.0000	0.0000	7.3800	4.1400	9.0000	18.000	0.0000	0.0000
10	-7.2042E-04	-4.0544E-06	-236.72	-92.429	-176.74	-10.113	-99.691	-2.3134	964.79	7.8279E+06	7.8279E+06
x( M)	0.0000	10.080	5.7600	0.0000	0.0000	7.9200	4.1400	9.0000	18.000	0.0000	0.0000
11	-7.2042E-04	-4.0224E-06	-236.20	-91.250	-176.27	-9.9853	-99.246	-2.2730	1062.4	7.8279E+06	7.8279E+06
x( M)	0.0000	10.080	5.7600	0.0000	0.0000	7.9200	4.1400	9.0000	18.000	0.0000	0.0000
12	-7.2042E-04	-3.6722E-06	-279.45	-104.35	-215.80	-13.181	-141.63	-4.0789	1160.0	7.8279E+06	7.8279E+06
x( M)	0.0000	9.3600	5.4000	0.0000	0.0000	7.3800	4.1400	9.0000	18.000	0.0000	0.0000
13	-7.1928E-04	-3.9538E-06	-250.34	-97.145	-189.03	-11.155	-112.46	-2.9166	939.65	7.8279E+06	7.8279E+06
x( M)	0.0000	9.7200	5.7600	0.0000	0.0000	7.7400	4.1400	9.0000	18.000	0.0000	0.0000
14	-7.1928E-04	-3.9259E-06	-249.19	-95.696	-187.94	-10.965	-111.34	-2.8406	1037.2	7.8279E+06	7.8279E+06
x( M)	0.0000	9.7200	5.7600	0.0000	0.0000	7.7400	4.1400	9.0000	18.000	0.0000	0.0000

APPALTATORE:

Consorzio

Soci



ITINERARIO NAPOLI – BARI

PROGETTAZIONE:

Mandataria

Mandanti



RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

PROGETTO ESECUTIVO

RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 109 di 354
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15	-7.1928E-04	-3.6241E-06	-286.31	-106.63	-222.10	-13.754	-149.12	-4.3679	1134.8	7.8279E+06	7.8279E+06
x( M)	0.0000	9.1800	5.4000	0.0000	0.0000	7.3800	4.1400	9.0000	18.000	0.0000	0.0000
Min.	-7.2384E-04	-4.0555E-06	-288.82	-106.83	-224.28	-13.813	-150.66	-4.3987	939.65	7.8279E+06	7.8279E+06
Pile N.	1	7	3	3	3	3	3	3	13	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-Dir M	DISPL. z-Dir M	MOMENT z-Dir KN- M	MOMENT y-Dir KN- M	SHEAR y-Dir KN	SHEAR z-Dir KN	SOIL REACT y-Dir KN/ M	SOIL REACT z-Dir KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-Dir KN- M**2	FLEX. RIG. y-Dir KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	2.2118E-05	1.3068E-04	580.83	45.200	63.246	33.017	16.542	20.047	2817.8	7.8279E+06	7.8279E+06
x( M)	9.7200	0.0000	0.0000	5.5800	7.7400	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
2	2.2160E-05	1.2954E-04	578.58	44.577	62.739	32.494	16.253	19.660	2908.0	7.8279E+06	7.8279E+06
x( M)	9.7200	0.0000	0.0000	5.5800	7.7400	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
3	2.0692E-05	1.2840E-04	646.94	50.534	79.022	37.959	25.113	25.900	3214.3	7.8279E+06	7.8279E+06
x( M)	9.1800	0.0000	0.0000	5.4000	7.3800	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
4	2.2710E-05	1.3068E-04	550.27	42.452	56.686	30.583	12.750	17.551	2699.1	7.8279E+06	7.8279E+06
x( M)	10.080	0.0000	0.0000	5.7600	7.9200	0.0000	10.440	4.1400	0.0000	0.0000	0.0000
5	2.2737E-05	1.2954E-04	549.22	41.973	56.466	30.186	12.696	17.299	2793.0	7.8279E+06	7.8279E+06
x( M)	10.080	0.0000	0.0000	5.7600	7.9200	0.0000	10.440	4.1400	0.0000	0.0000	0.0000
6	2.0982E-05	1.2840E-04	631.28	49.166	75.220	36.693	23.219	24.451	3141.3	7.8279E+06	7.8279E+06
x( M)	9.3600	0.0000	0.0000	5.4000	7.3800	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
7	2.2692E-05	1.3068E-04	548.60	42.390	56.442	30.531	12.691	17.503	2669.0	7.8279E+06	7.8279E+06
x( M)	10.080	0.0000	0.0000	5.7600	7.9200	0.0000	10.440	4.1400	0.0000	0.0000	0.0000
8	2.2716E-05	1.2954E-04	547.63	41.916	56.235	30.139	12.639	17.257	2763.0	7.8279E+06	7.8279E+06
x( M)	10.080	0.0000	0.0000	5.7600	7.9200	0.0000	10.440	4.1400	0.0000	0.0000	0.0000
9	2.0955E-05	1.2840E-04	630.05	49.159	75.066	36.686	23.164	24.450	3112.5	7.8279E+06	7.8279E+06
x( M)	9.3600	0.0000	0.0000	5.4000	7.3800	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
10	2.2650E-05	1.3068E-04	548.01	42.427	56.429	30.564	12.689	17.543	2642.1	7.8279E+06	7.8279E+06
x( M)	10.080	0.0000	0.0000	5.7600	7.9200	0.0000	10.440	4.1400	0.0000	0.0000	0.0000
11	2.2675E-05	1.2954E-04	547.03	41.953	56.224	30.173	12.637	17.296	2736.2	7.8279E+06	7.8279E+06
x( M)	10.080	0.0000	0.0000	5.7600	7.9200	0.0000	10.440	4.1400	0.0000	0.0000	0.0000
12	2.0923E-05	1.2840E-04	629.00	49.168	74.956	36.693	23.131	24.466	3084.2	7.8279E+06	7.8279E+06
x( M)	9.3600	0.0000	0.0000	5.4000	7.3800	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
13	2.2037E-05	1.3068E-04	573.85	44.929	62.165	32.786	16.058	19.829	2696.2	7.8279E+06	7.8279E+06
x( M)	9.7200	0.0000	0.0000	5.5800	7.7400	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
14	2.2088E-05	1.2954E-04	571.59	44.305	61.654	32.264	15.768	19.443	2786.3	7.8279E+06	7.8279E+06
x( M)	9.9000	0.0000	0.0000	5.5800	7.7400	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
15	2.0600E-05	1.2840E-04	641.05	50.424	78.165	37.852	24.772	25.809	3096.1	7.8279E+06	7.8279E+06
x( M)	9.1800	0.0000	0.0000	5.4000	7.3800	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
Max.	2.2737E-05	1.3068E-04	646.94	50.534	79.022	37.959	25.113	25.900	3214.3	7.8279E+06	7.8279E+06
Pile N.	5	1	3	3	3	3	3	3	3	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
33146.2	-1994.35	493.797	-156.409	4115.61	-2859.71

\* 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
1.26627E-03	-4.58992E-04	1.22993E-04	-2.81002E-07	5.26457E-06	9.09341E-06

\* PILE TOP DISPLACEMENTS, GLOBAL \*



	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.1780E-03	-4.6152E-04	1.2173E-04	-2.8100E-07	5.2646E-06	9.0934E-06
Pile N.	13	13	1	1	1	1
MAXIMUM	1.3546E-03	-4.5646E-04	1.2426E-04	-2.8100E-07	5.2646E-06	9.0934E-06
Pile N.	3	1	3	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	2056.3	-152.27	29.610	-0.093657	-107.51	-444.32
Pile N.	13	15	7	1	3	15
MAXIMUM	2363.2	-120.81	38.348	-0.093657	-88.801	-378.25
Pile N.	3	5	3	1	7	5

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.1780E-03	-4.6152E-04	1.2173E-04	-2.8100E-07	5.2646E-06	9.0934E-06
Pile N.	13	13	1	1	1	1
MAXIMUM	1.3546E-03	-4.5646E-04	1.2426E-04	-2.8100E-07	5.2646E-06	9.0934E-06

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	
COMMESSA <b>IF28</b> LOTTO <b>01</b> CODIFICA <b>E Z CL</b> DOCUMENTO <b>VI0403 001</b> REV. <b>B</b> FOGLIO <b>110 di 354</b>	

Pile N.	3	1	3	1	1	1
<b>* PILE TOP REACTIONS, LOCAL *</b>						
	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	2056.3	-152.27	29.610	-0.093657	-107.51	-444.32
Pile N.	13	15	7	1	3	15
MAXIMUM	2363.2	-120.81	38.348	-0.093657	-88.801	-378.25
Pile N.	3	5	3	1	7	5

**\* EFFECTS FOR LATERALLY LOADED PILE \***

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
Min.	-4.6152E-04	-3.9088E-06	-190.28	-107.51	-152.29	-13.784	-116.29	-4.4001	1163.6
Pile N.	13	8	15	3	15	3	3	3	13
Max.	1.4938E-05	1.2426E-04	444.32	50.441	51.724	38.351	16.516	30.106	2708.4
Pile N.	11	3	15	3	3	3	3	3	3

LOAD CASE : 2

**\* TABLE L \* COMPUTATION ON PILE CAP**

**\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \***

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
32526.2	-4433.76	493.797	-183.189	4115.61	8688.37

**\* 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
1.24248E-03	-1.24838E-03	1.33935E-04	-2.57717E-07	5.30102E-06	6.16861E-05

**\* PILE TOP DISPLACEMENTS, GLOBAL \***

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	9.1718E-04	-1.2507E-03	1.3277E-04	-2.5772E-07	5.3010E-06	6.1686E-05
Pile N.	13	13	1	1	1	1
MAXIMUM	1.5678E-03	-1.2461E-03	1.3510E-04	-2.5772E-07	5.3010E-06	6.1686E-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	1603.3	-342.61	29.521	-0.085897	-110.28	-964.48
Pile N.	13	15	7	1	3	15
MAXIMUM	2733.6	-267.10	38.418	-0.085897	-91.157	-808.26
Pile N.	3	8	3	1	7	5

**\* PILE TOP DISPLACEMENTS, LOCAL \***

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	9.1718E-04	-1.2507E-03	1.3277E-04	-2.5772E-07	5.3010E-06	6.1686E-05
Pile N.	13	13	1	1	1	1
MAXIMUM	1.5678E-03	-1.2461E-03	1.3510E-04	-2.5772E-07	5.3010E-06	6.1686E-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	1603.3	-342.61	29.521	-0.085897	-110.28	-964.48
Pile N.	13	15	7	1	3	15
MAXIMUM	2733.6	-267.10	38.418	-0.085897	-91.157	-808.26
Pile N.	3	8	3	1	7	5

**\* EFFECTS FOR LATERALLY LOADED PILE \***

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
Min.	-1.2507E-03	-3.9777E-06	-459.95	-110.28	-342.63	-13.743	-204.09	-4.2839	907.26
Pile N.	13	8	15	3	15	3	3	3	13
Max.	3.6696E-05	1.3509E-04	964.48	50.290	125.49	38.422	39.206	22.657	4466.9
Pile N.	11	3	15	3	15	3	3	3	3

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
30606.6	-3983.04	405.716	-81.2061	2358.43	3224.71

**\* 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
1.16882E-03	-1.06551E-03	1.05456E-04	1.03184E-07	3.39889E-06	4.29284E-05

<b>APPALTATORE:</b> Consorzio  Soci  		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria  Mandanti  							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>							COMMESSA <b>IF28</b>

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	9.4505E-04	-1.0664E-03	1.0499E-04	1.0318E-07	3.3989E-06	4.2928E-05
Pile N.	13	1	3	1	1	1
MAXIMUM	1.3926E-03	-1.0646E-03	1.0592E-04	1.0318E-07	3.3989E-06	4.2928E-05
Pile N.	3	13	1	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	1651.7	-307.00	24.529	0.034391	-89.992	-877.07
Pile N.	13	3	8	1	3	3
MAXIMUM	2429.2	-240.46	31.052	0.034391	-76.672	-739.71
Pile N.	3	8	3	1	8	8

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	9.4505E-04	-1.0664E-03	1.0499E-04	1.0318E-07	3.3989E-06	4.2928E-05
Pile N.	13	1	3	1	1	1
MAXIMUM	1.3926E-03	-1.0646E-03	1.0592E-04	1.0318E-07	3.3989E-06	4.2928E-05
Pile N.	3	13	1	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	1651.7	-307.00	24.529	0.034391	-89.992	-877.07
Pile N.	13	3	8	1	3	3
MAXIMUM	2429.2	-240.46	31.052	0.034391	-76.672	-739.71
Pile N.	3	8	3	1	8	8

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
Min.	-1.0664E-03	-3.2148E-06	-403.42	-89.992	-307.03	-10.954	-188.32	-3.4369	934.66
Pile N.	1	7	3	3	3	3	3	3	13
Max.	3.2069E-05	1.0592E-04	877.07	40.055	110.26	31.054	34.687	18.876	4035.6
Pile N.	8	1	3	3	3	3	3	3	3

LOAD CASE : 4

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
33094.9	-4250.16	696.757	-124.514	6548.49	3800.87

\* 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
1.26430E-03	-1.15108E-03	1.90294E-04	1.65804E-07	8.16711E-06	4.68759E-05

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	9.7985E-04	-1.1526E-03	1.8955E-04	1.6580E-07	8.1671E-06	4.6876E-05
Pile N.	13	1	3	1	1	1
MAXIMUM	1.5487E-03	-1.1496E-03	1.9104E-04	1.6580E-07	8.1671E-06	4.6876E-05
Pile N.	3	13	1	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	1712.2	-327.97	42.022	0.055262	-152.25	-937.98
Pile N.	13	3	8	1	3	3
MAXIMUM	2700.5	-256.34	53.483	0.055262	-128.87	-789.73
Pile N.	3	8	3	1	8	11

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	9.7985E-04	-1.1526E-03	1.8955E-04	1.6580E-07	8.1671E-06	4.6876E-05
Pile N.	13	1	3	1	1	1
MAXIMUM	1.5487E-03	-1.1496E-03	1.9104E-04	1.6580E-07	8.1671E-06	4.6876E-05
Pile N.	3	13	1	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	1712.2	-327.97	42.022	0.055262	-152.25	-937.98
Pile N.	13	3	8	1	3	3
MAXIMUM	2700.5	-256.34	53.483	0.055262	-128.87	-789.73
Pile N.	3	8	3	1	8	11

\* EFFECTS FOR LATERALLY LOADED PILE \*





## APPALTATORE:

Consorzio

Soci



## ITINERARIO NAPOLI – BARI

## PROGETTAZIONE:

Mandataria

Mandanti

RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

## PROGETTO ESECUTIVO

## RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO
IF28	01	E Z CL	VI0403 001	B	113 di 354

MINIMUM	2071.2	-166.06	42.015	-0.030920	-149.80	-493.21
Pile N.	13	3	8	1	3	3
MAXIMUM	2376.6	-131.99	53.696	-0.030920	-125.77	-423.04
Pile N.	3	8	3	1	8	8

## \* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	1.1865E-03	-4.8438E-04	1.7641E-04	-9.2770E-08	8.1226E-06	3.2850E-06
Pile N.	13	13	1	1	1	1
MAXIMUM	1.3623E-03	-4.8271E-04	1.7725E-04	-9.2770E-08	8.1226E-06	3.2850E-06
Pile N.	3	1	3	1	1	1

## \* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	2071.2	-166.06	42.015	-0.030920	-149.80	-493.21
Pile N.	13	3	8	1	3	3
MAXIMUM	2376.6	-131.99	53.696	-0.030920	-125.77	-423.04
Pile N.	3	8	3	1	8	8

## \* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT y-DIR KN- M	MOMENT z-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
Min.	-4.8438E-04	-5.5896E-06	-202.24	-149.80	-166.07	-19.519	-120.60	-6.2310	1172.1
Pile N.	13	8	3	3	3	3	3	3	13
Max.	1.5886E-05	1.7725E-04	493.21	71.410	55.270	53.700	17.611	40.618	2900.6
Pile N.	11	3	3	3	3	3	3	3	3

LOAD CASE : 7

## \* TABLE L \* COMPUTATION ON PILE CAP

## \* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
33358.9	-2177.94	696.757	-111.124	6548.49	-5604.44

## \* 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
1.27443E-03	-4.83548E-04	1.76828E-04	-9.27661E-08	8.12261E-06	3.28596E-06

## \* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.1865E-03	-4.8438E-04	1.7641E-04	-9.2766E-08	8.1226E-06	3.2860E-06
Pile N.	13	13	1	1	1	1
MAXIMUM	1.3623E-03	-4.8271E-04	1.7725E-04	-9.2766E-08	8.1226E-06	3.2860E-06
Pile N.	3	1	3	1	1	1

## \* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	2071.2	-166.06	42.015	-0.030919	-149.80	-493.21
Pile N.	13	3	8	1	3	3
MAXIMUM	2376.6	-131.99	53.696	-0.030919	-125.77	-423.04
Pile N.	3	8	3	1	8	8

## \* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	1.1865E-03	-4.8438E-04	1.7641E-04	-9.2766E-08	8.1226E-06	3.2860E-06
Pile N.	13	13	1	1	1	1
MAXIMUM	1.3623E-03	-4.8271E-04	1.7725E-04	-9.2766E-08	8.1226E-06	3.2860E-06
Pile N.	3	1	3	1	1	1

## \* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	2071.2	-166.06	42.015	-0.030919	-149.80	-493.21
Pile N.	13	3	8	1	3	3
MAXIMUM	2376.6	-131.99	53.696	-0.030919	-125.77	-423.04
Pile N.	3	8	3	1	8	8

## \* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT y-DIR KN- M	MOMENT z-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
Min.	-4.8438E-04	-5.5896E-06	-202.24	-149.80	-166.07	-19.519	-120.60	-6.2310	1172.1
Pile N.	13	8	3	3	3	3	3	3	13
Max.	1.5886E-05	1.7725E-04	493.21	71.410	55.271	53.700	17.611	40.618	2900.6
Pile N.	11	3	3	3	3	3	3	3	3

LOAD CASE : 8

APPALTATORE:

Consorzio

Soci



ITINERARIO NAPOLI – BARI

PROGETTAZIONE:

Mandataria

Mandanti



RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

PROGETTO ESECUTIVO

RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 114 di 354
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\* 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
31051.5	-4250.16	432.357	-94.0608	2267.88	4284.56

\* 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
1.18589E-03	-1.15401E-03	1.12610E-04	7.91530E-08	3.39667E-06	4.81657E-05

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	9.3857E-04	-1.1547E-03	1.1225E-04	7.9153E-08	3.3967E-06	4.8166E-05
Pile N.	13	1	3	1	1	1
MAXIMUM	1.4332E-03	-1.1533E-03	1.1297E-04	7.9153E-08	3.3967E-06	4.8166E-05
Pile N.	3	13	1	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	1640.4	-327.78	26.134	0.026381	-96.566	-935.32
Pile N.	13	3	8	1	3	3
MAXIMUM	2499.8	-256.43	33.142	0.026381	-82.188	-788.05
Pile N.	3	8	3	1	8	8

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	9.3857E-04	-1.1547E-03	1.1225E-04	7.9153E-08	3.3967E-06	4.8166E-05
Pile N.	13	1	3	1	1	1
MAXIMUM	1.4332E-03	-1.1533E-03	1.1297E-04	7.9153E-08	3.3967E-06	4.8166E-05
Pile N.	3	13	1	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	1640.4	-327.78	26.134	0.026381	-96.566	-935.32
Pile N.	13	3	8	1	3	3
MAXIMUM	2499.8	-256.43	33.142	0.026381	-82.188	-788.05
Pile N.	3	8	3	1	8	8

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
Min.	-1.1547E-03	-3.4090E-06	-431.89	-96.566	-327.81	-11.623	-197.17	-3.6255	928.29
Pile N.	1	7	3	3	3	3	3	3	13
Max.	3.4407E-05	1.1297E-04	935.32	42.495	118.02	33.144	36.964	19.675	4252.4
Pile N.	8	1	3	3	3	3	3	3	3

LOAD CASE : 9

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
33358.9	-2177.94	696.757	-111.124	6548.49	-5604.80

\* 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
1.27443E-03	-4.83544E-04	1.76828E-04	-9.27703E-08	8.12261E-06	3.28500E-06

\* PILE TOP DISPLACEMENTS, GLOBAL \*




	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.1865E-03	-4.8438E-04	1.7641E-04	-9.2770E-08	8.1226E-06	3.2850E-06
Pile N.	13	13	1	1	1	1
MAXIMUM	1.3623E-03	-4.8271E-04	1.7725E-04	-9.2770E-08	8.1226E-06	3.2850E-06
Pile N.	3	1	3	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	2071.2	-166.06	42.015	-0.030920	-149.80	-493.21
Pile N.	13	3	8	1	3	3
MAXIMUM	2376.6	-131.99	53.696	-0.030920	-125.77	-423.04
Pile N.	3	8	3	1	8	8

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	1.1865E-03	-4.8438E-04	1.7641E-04	-9.2770E-08	8.1226E-06	3.2850E-06
Pile N.	13	13	1	1	1	1
MAXIMUM	1.3623E-03	-4.8271E-04	1.7725E-04	-9.2770E-08	8.1226E-06	3.2850E-06
Pile N.	3	1	3	1	1	1

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>							COMMESSA <b>IF28</b>

Pile N.	3	1	3	1	1	1
<b>* PILE TOP REACTIONS, LOCAL *</b>						
	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
	*****	*****	*****	*****	*****	*****
MINIMUM	2071.2	-166.06	42.015	-0.030920	-149.80	-493.21
Pile N.	13	3	8	1	3	3
MAXIMUM	2376.6	-131.99	53.696	-0.030920	-125.77	-423.04
Pile N.	3	8	3	1	8	8

**\* EFFECTS FOR LATERALLY LOADED PILE \***

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT y-DIR	SOIL REACT z-DIR	TOTAL STRESS
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
Min.	-4.8438E-04	-5.5896E-06	-202.24	-149.80	-166.07	-19.519	-120.60	-6.2310	1172.1
Pile N.	13	8	3	3	3	3	3	3	13
Max.	1.5886E-05	1.7725E-04	493.21	71.410	55.270	53.700	17.611	40.618	2900.6
Pile N.	11	3	3	3	3	3	3	3	3

LOAD CASE : 10

**\* TABLE L \* COMPUTATION ON PILE CAP**

**\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \***

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
32526.2	-4433.76	493.797	-183.189	4115.61	8688.72

**\* 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
1.24248E-03	-1.24838E-03	1.33935E-04	-2.57717E-07	5.30102E-06	6.16870E-05

**\* PILE TOP DISPLACEMENTS, GLOBAL \***

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
	*****	*****	*****	*****	*****	*****
MINIMUM	9.1718E-04	-1.2507E-03	1.3277E-04	-2.5772E-07	5.3010E-06	6.1687E-05
Pile N.	13	13	1	1	1	1
MAXIMUM	1.5678E-03	-1.2461E-03	1.3510E-04	-2.5772E-07	5.3010E-06	6.1687E-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	1603.3	-342.61	29.521	-0.085896	-110.28	-964.48
Pile N.	13	15	7	1	3	15
MAXIMUM	2733.6	-267.10	38.418	-0.085896	-91.157	-808.25
Pile N.	3	8	3	1	7	5

**\* PILE TOP DISPLACEMENTS, LOCAL \***

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
	*****	*****	*****	*****	*****	*****
MINIMUM	9.1718E-04	-1.2507E-03	1.3277E-04	-2.5772E-07	5.3010E-06	6.1687E-05
Pile N.	13	13	1	1	1	1
MAXIMUM	1.5678E-03	-1.2461E-03	1.3510E-04	-2.5772E-07	5.3010E-06	6.1687E-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	1603.3	-342.61	29.521	-0.085896	-110.28	-964.48
Pile N.	13	15	7	1	3	15
MAXIMUM	2733.6	-267.10	38.418	-0.085896	-91.157	-808.25
Pile N.	3	8	3	1	7	5

**\* 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.	-1.2507E-03	-3.9777E-06	-459.95	-110.28	-342.63	-13.743	-204.09	-4.2839	907.26
Pile N.	13	8	15	3	15	3	3	3	13
Max.	3.6696E-05	1.3509E-04	964.48	50.290	125.50	38.422	39.206	22.657	4466.9
Pile N.	11	3	15	3	15	3	3	3	3

LOAD CASE : 11



**\* TABLE L \* COMPUTATION ON PILE CAP**

**\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \***

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
32693.0	-2361.54	524.152	-299.787	5233.09	1081.53

**\* 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
1.24888E-03	-5.88816E-04	1.34612E-04	-8.17295E-07	6.39816E-06	2.28806E-05

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>		COMMESSA <b>IF28</b>	LOTTO <b>01</b>	CODIFICA <b>E ZZ CL</b>	DOCUMENTO <b>VI0403 001</b>	REV. <b>B</b>	FOGLIO <b>116 di 354</b>

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.0883E-03	-5.9617E-04	1.3093E-04	-8.1729E-07	6.3982E-06	2.2881E-05
Pile N.	13	13	1	1	1	1
MAXIMUM	1.4094E-03	-5.8146E-04	1.3829E-04	-8.1729E-07	6.3982E-06	2.2881E-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	1900.6	-182.55	30.700	-0.2724	-115.97	-518.19
Pile N.	13	15	7	1	3	15
MAXIMUM	2458.5	-142.16	41.540	-0.2724	-91.349	-431.74
Pile N.	3	5	3	1	7	5

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	1.0883E-03	-5.9617E-04	1.3093E-04	-8.1729E-07	6.3982E-06	2.2881E-05
Pile N.	13	13	1	1	1	1
MAXIMUM	1.4094E-03	-5.8146E-04	1.3829E-04	-8.1729E-07	6.3982E-06	2.2881E-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	1900.6	-182.55	30.700	-0.2724	-115.97	-518.19
Pile N.	13	15	7	1	3	15
MAXIMUM	2458.5	-142.16	41.540	-0.2724	-91.349	-431.74
Pile N.	3	5	3	1	7	5

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
Min.	-5.9617E-04	-4.2282E-06	-239.32	-115.97	-182.57	-15.146	-131.13	-4.8357	1075.5
Pile N.	13	8	15	3	15	3	15	3	13
Max.	1.8746E-05	1.3829E-04	518.19	55.408	65.123	41.543	20.712	30.499	2957.2
Pile N.	11	3	15	3	15	3	15	3	3

LOAD CASE : 12

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
28827.0	-2914.56	498.587	-49.6459	4534.33	-1014.09

\* 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
1.10053E-03	-7.21561E-04	1.29537E-04	2.52977E-07	5.68336E-06	2.20568E-05

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	9.5012E-04	-7.2384E-04	1.2840E-04	2.5298E-07	5.6834E-06	2.2057E-05
Pile N.	13	1	3	1	1	1
MAXIMUM	1.2509E-03	-7.1928E-04	1.3067E-04	2.5298E-07	5.6834E-06	2.2057E-05
Pile N.	3	13	1	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	1660.5	-224.26	30.137	0.084317	-106.83	-646.94
Pile N.	13	3	8	1	3	3
MAXIMUM	2183.1	-176.26	37.956	0.084317	-91.178	-547.03
Pile N.	3	11	3	1	8	11







\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	9.5012E-04	-7.2384E-04	1.2840E-04	2.5298E-07	5.6834E-06	2.2057E-05
Pile N.	13	1	3	1	1	1
MAXIMUM	1.2509E-03	-7.1928E-04	1.3067E-04	2.5298E-07	5.6834E-06	2.2057E-05
Pile N.	3	13	1	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	1660.5	-224.26	30.137	0.084317	-106.83	-646.94
Pile N.	13	3	8	1	3	3
MAXIMUM	2183.1	-176.26	37.956	0.084317	-91.178	-547.03
Pile N.	3	11	3	1	8	11

\* EFFECTS FOR LATERALLY LOADED PILE \*

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	COMMESSA <b>IF28</b> LOTTO <b>01</b> CODIFICA <b>E ZZ CL</b> DOCUMENTO <b>VI0403 001</b> REV. <b>B</b> FOGLIO <b>117 di 354</b>

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.	-7.2384E-04	-4.0555E-06	-288.82	-106.83	-224.28	-13.813	-150.66	-4.3987	939.65
Pile N.	1	7	3	3	3	3	3	3	13
Max.	2.2737E-05	1.3068E-04	646.94	50.534	79.022	37.959	25.113	25.900	3214.3
Pile N.	5	1	3	3	3	3	3	3	3

### 13.2 SPALLA A SLU – SLV

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: July 03, 2020 Time: 09:46:47

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

New Group

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

LOAD CASE : 1  
 CASE NAME : Load Case  
 LOAD TYPE : Special, Sp

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	0.6587	1.0000
2	0.6372	1.0000
3	0.8661	1.0000
4	0.5156	1.0000
5	0.4953	1.0000
6	0.7601	1.0000
7	0.5062	1.0000
8	0.4871	1.0000
9	0.7543	1.0000
10	0.5070	1.0000
11	0.4879	1.0000
12	0.7543	1.0000
13	0.5845	1.0000
14	0.5615	1.0000
15	0.8111	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN    HOR. LOAD Y, KN    HOR. LOAD Z, KN  
 45027.5    -1690.85    730.964

MOMENT X, KN- M    MOMENT Y, KN- M    MOMENT Z, KN- M

<b>APPALTATORE:</b> Consorzio <span style="margin-left: 100px;">Soci</span>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>												
<b>PROGETTAZIONE:</b> Mandataria <span style="margin-left: 100px;">Mandanti</span>   													
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">COMMESSA</td> <td style="width: 10%;">LOTTO</td> <td style="width: 15%;">CODIFICA</td> <td style="width: 15%;">DOCUMENTO</td> <td style="width: 10%;">REV.</td> <td style="width: 10%;">FOGLIO</td> </tr> <tr> <td>IF28</td> <td>01</td> <td>E ZZ CL</td> <td>VI0403 001</td> <td>B</td> <td>118 di 354</td> </tr> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF28	01	E ZZ CL	VI0403 001	B	118 di 354
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO								
IF28	01	E ZZ CL	VI0403 001	B	118 di 354								

-228.282      6103.67      -7838.94

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL , M    HORIZONTAL Y, M    HORIZONTAL Z, M  
 1.72219E-03    -3.06540E-04    1.65579E-04

ANGLE ROT. X,RAD    ANGLE ROT. Y,RAD    ANGLE ROT. Z,RAD  
 -7.31390E-07    7.75649E-06    -7.15321E-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

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
1	1.8242E-03	-2.9996E-04	1.6229E-04	-7.3139E-07	7.7565E-06	-7.1532E-06
2	1.7920E-03	-2.9996E-04	1.6558E-04	-7.3139E-07	7.7565E-06	-7.1532E-06
3	1.7598E-03	-2.9996E-04	1.6887E-04	-7.3139E-07	7.7565E-06	-7.1532E-06
4	1.7893E-03	-3.0325E-04	1.6229E-04	-7.3139E-07	7.7565E-06	-7.1532E-06
5	1.7571E-03	-3.0325E-04	1.6558E-04	-7.3139E-07	7.7565E-06	-7.1532E-06
6	1.7249E-03	-3.0325E-04	1.6887E-04	-7.3139E-07	7.7565E-06	-7.1532E-06
7	1.7544E-03	-3.0654E-04	1.6229E-04	-7.3139E-07	7.7565E-06	-7.1532E-06
8	1.7222E-03	-3.0654E-04	1.6558E-04	-7.3139E-07	7.7565E-06	-7.1532E-06
9	1.6900E-03	-3.0654E-04	1.6887E-04	-7.3139E-07	7.7565E-06	-7.1532E-06
10	1.7195E-03	-3.0983E-04	1.6229E-04	-7.3139E-07	7.7565E-06	-7.1532E-06
11	1.6873E-03	-3.0983E-04	1.6558E-04	-7.3139E-07	7.7565E-06	-7.1532E-06
12	1.6551E-03	-3.0983E-04	1.6887E-04	-7.3139E-07	7.7565E-06	-7.1532E-06
13	1.6846E-03	-3.1312E-04	1.6229E-04	-7.3139E-07	7.7565E-06	-7.1532E-06
14	1.6524E-03	-3.1312E-04	1.6558E-04	-7.3139E-07	7.7565E-06	-7.1532E-06
15	1.6202E-03	-3.1312E-04	1.6887E-04	-7.3139E-07	7.7565E-06	-7.1532E-06

MINIMUM	1.6202E-03	-3.1312E-04	1.6229E-04	-7.3139E-07	7.7565E-06	-7.1532E-06
Pile N.	15	13	1	1	1	1
MAXIMUM	1.8242E-03	-2.9996E-04	1.6887E-04	-7.3139E-07	7.7565E-06	-7.1532E-06
Pile N.	1	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

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
1	3179.0	-113.30	48.855	-0.2438	-138.03	-353.93
2	3123.1	-111.94	49.365	-0.2438	-140.26	-351.19
3	3067.2	-124.57	56.700	-0.2438	-155.66	-375.84
4	3118.4	-104.90	44.447	-0.2438	-129.19	-338.00
5	3062.5	-103.38	44.794	-0.2438	-131.04	-334.82
6	3006.5	-120.13	53.921	-0.2438	-150.37	-368.54
7	3057.8	-105.17	44.089	-0.2438	-128.44	-339.65
8	3001.8	-103.71	44.460	-0.2438	-130.34	-336.57
9	2945.9	-120.91	53.714	-0.2438	-149.95	-371.29
10	2997.1	-106.18	44.069	-0.2438	-128.38	-342.83
11	2941.2	-104.70	44.442	-0.2438	-130.29	-339.74
12	2885.3	-122.01	53.662	-0.2438	-149.83	-374.66
13	2936.5	-112.65	46.491	-0.2438	-133.27	-357.24
14	2880.5	-111.02	46.851	-0.2438	-135.18	-353.89
15	2824.6	-126.28	55.105	-0.2438	-152.56	-384.18


MINIMUM	2824.6	-126.28	44.069	-0.2438	-155.66	-384.18
Pile N.	15	15	10	1	3	15
MAXIMUM	3179.0	-103.38	56.700	-0.2438	-128.38	-334.82
Pile N.	1	5	3	1	10	5

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP    DISP. x, M    DISP. y, M    DISP. z, M    ROT. x,RAD    ROT. y,RAD    ROT. z,RAD

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
1	1.8242E-03	-2.9996E-04	1.6229E-04	-7.3139E-07	7.7565E-06	-7.1532E-06
2	1.7920E-03	-2.9996E-04	1.6558E-04	-7.3139E-07	7.7565E-06	-7.1532E-06
3	1.7598E-03	-2.9996E-04	1.6887E-04	-7.3139E-07	7.7565E-06	-7.1532E-06
4	1.7893E-03	-3.0325E-04	1.6229E-04	-7.3139E-07	7.7565E-06	-7.1532E-06
5	1.7571E-03	-3.0325E-04	1.6558E-04	-7.3139E-07	7.7565E-06	-7.1532E-06
6	1.7249E-03	-3.0325E-04	1.6887E-04	-7.3139E-07	7.7565E-06	-7.1532E-06
7	1.7544E-03	-3.0654E-04	1.6229E-04	-7.3139E-07	7.7565E-06	-7.1532E-06
8	1.7222E-03	-3.0654E-04	1.6558E-04	-7.3139E-07	7.7565E-06	-7.1532E-06
9	1.6900E-03	-3.0654E-04	1.6887E-04	-7.3139E-07	7.7565E-06	-7.1532E-06
10	1.7195E-03	-3.0983E-04	1.6229E-04	-7.3139E-07	7.7565E-06	-7.1532E-06
11	1.6873E-03	-3.0983E-04	1.6558E-04	-7.3139E-07	7.7565E-06	-7.1532E-06
12	1.6551E-03	-3.0983E-04	1.6887E-04	-7.3139E-07	7.7565E-06	-7.1532E-06
13	1.6846E-03	-3.1312E-04	1.6229E-04	-7.3139E-07	7.7565E-06	-7.1532E-06
14	1.6524E-03	-3.1312E-04	1.6558E-04	-7.3139E-07	7.7565E-06	-7.1532E-06
15	1.6202E-03	-3.1312E-04	1.6887E-04	-7.3139E-07	7.7565E-06	-7.1532E-06

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>				
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>					
<b>COMMESSA</b> <b>IF28</b>	<b>LOTTO</b> <b>01</b>	<b>CODIFICA</b> <b>E ZZ CL</b>	<b>DOCUMENTO</b> <b>VI0403 001</b>	<b>REV.</b> <b>B</b>	<b>FOGLIO</b> <b>119 di 354</b>

MINIMUM	1.6202E-03	-3.1312E-04	1.6229E-04	-7.3139E-07	7.7565E-06	-7.1532E-06
Pile N.	15	13	1	1	1	1
MAXIMUM	1.8242E-03	-2.9996E-04	1.6887E-04	-7.3139E-07	7.7565E-06	-7.1532E-06
Pile N.	1	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	3179.0	-113.30	48.855	-0.2438	-138.03	-353.93
2	3123.1	-111.94	49.365	-0.2438	-140.26	-351.19
3	3067.2	-124.57	56.700	-0.2438	-155.66	-375.84
4	3118.4	-104.90	44.447	-0.2438	-129.19	-338.00
5	3062.5	-103.38	44.794	-0.2438	-131.04	-334.82
6	3006.5	-120.13	53.921	-0.2438	-150.37	-368.54
7	3057.8	-105.17	44.089	-0.2438	-128.44	-339.65
8	3001.8	-103.71	44.460	-0.2438	-130.34	-336.57
9	2945.9	-120.91	53.714	-0.2438	-149.95	-371.29
10	2997.1	-106.18	44.069	-0.2438	-128.38	-342.83
11	2941.2	-104.70	44.442	-0.2438	-130.29	-339.74
12	2885.3	-122.01	53.662	-0.2438	-149.83	-374.66
13	2936.5	-112.65	46.491	-0.2438	-133.27	-357.24
14	2880.5	-111.02	46.851	-0.2438	-135.18	-353.89
15	2824.6	-126.28	55.105	-0.2438	-152.56	-384.18

MINIMUM	2824.6	-126.28	44.069	-0.2438	-155.66	-384.18
Pile N.	15	15	10	1	3	15
MAXIMUM	3179.0	-103.38	56.700	-0.2438	-128.38	-334.82
Pile N.	1	5	3	1	10	5

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







1	2945.5
2	2908.6
3	2963.4
4	2856.7
5	2818.1
6	2902.6
7	2826.3
8	2788.0
9	2875.5
10	2800.9
11	2762.5
12	2850.5
13	2812.4
14	2773.4
15	2846.0

MINIMUM	2762.5
Pile N.	11
MAXIMUM	2963.4
Pile N.	3

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT KN- M	MOMENT KN- M	MOMENT KN	SHEAR KN	SHEAR KN/ M	SOIL REACT KN/ M**2	SOIL REACT KN- M**2	TOTAL FLEX. RIG.	FLEX. RIG.
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN- M**2	KN- M**2	KN- M**2
1	-3.0051E-04	-3.6444E-06	-142.68	-138.03	-113.31	-22.489	-78.648	-8.1843	1799.0	7.8279E+06	7.8279E+06
x(M)	0.1800	8.6400	5.5800	0.0000	0.0000	7.2000	4.1400	8.8200	18.0000	0.0000	0.0000
2	-3.0052E-04	-3.7503E-06	-141.28	-140.26	-111.95	-22.591	-76.660	-8.1760	1767.3	7.8279E+06	7.8279E+06
x(M)	0.1800	8.8200	5.5800	0.0000	0.0000	7.2000	4.1400	9.0000	18.0000	0.0000	0.0000
3	-3.0047E-04	-3.5218E-06	-154.51	-155.66	-124.58	-26.960	-95.348	-10.135	1735.7	7.8279E+06	7.8279E+06
x(M)	0.1800	8.4600	5.4000	0.0000	0.0000	6.8400	4.1400	8.4600	18.0000	0.0000	0.0000
4	-3.0384E-04	-3.8814E-06	-133.81	-129.19	-104.91	-19.763	-66.228	-6.9412	1764.7	7.8279E+06	7.8279E+06
x(M)	0.1800	9.0000	5.5800	0.0000	0.0000	7.3800	4.1400	9.0000	18.0000	0.0000	0.0000
5	-3.0384E-04	-4.0000E-06	-132.23	-131.04	-103.39	-19.761	-64.196	-6.8725	1733.0	7.8279E+06	7.8279E+06
x(M)	0.1800	9.0000	5.7600	0.0000	0.0000	7.3800	4.1400	9.0000	18.0000	0.0000	0.0000
6	-3.0377E-04	-3.6482E-06	-150.24	-150.37	-120.14	-25.235	-87.531	-9.3310	1701.4	7.8279E+06	7.8279E+06
x(M)	0.1800	8.4600	5.4000	0.0000	0.0000	7.0200	4.1400	8.6400	18.0000	0.0000	0.0000
7	-3.0712E-04	-3.8946E-06	-134.38	-128.44	-105.18	-19.556	-65.792	-6.8380	1730.3	7.8279E+06	7.8279E+06
x(M)	0.1800	9.0000	5.7600	0.0000	0.0000	7.3800	4.1400	9.0000	18.0000	0.0000	0.0000
8	-3.0713E-04	-4.0096E-06	-132.85	-130.34	-103.72	-19.565	-63.848	-6.7745	1698.7	7.8279E+06	7.8279E+06
x(M)	0.1800	9.0000	5.7600	0.0000	0.0000	7.3800	4.1400	9.0000	18.0000	0.0000	0.0000
9	-3.0706E-04	-3.6497E-06	-151.32	-149.95	-120.92	-25.107	-87.675	-9.2749	1667.0	7.8279E+06	7.8279E+06
x(M)	0.1800	8.4600	5.4000	0.0000	0.0000	7.0200	4.1400	8.6400	18.0000	0.0000	0.0000
10	-3.1041E-04	-3.8892E-06	-135.72	-128.38	-106.19	-19.552	-66.322	-6.8392	1696.0	7.8279E+06	7.8279E+06
x(M)	0.1800	9.0000	5.7600	0.0000	0.0000	7.3800	4.1400	9.0000	18.0000	0.0000	0.0000
11	-3.1042E-04	-4.0038E-06	-134.18	-130.29	-104.71	-19.561	-64.370	-6.7762	1664.4	7.8279E+06	7.8279E+06
x(M)	0.1800	9.0000	5.7600	0.0000	0.0000	7.3800	4.1400	9.0000	18.0000	0.0000	0.0000
12	-3.1034E-04	-3.6451E-06	-152.73	-149.83	-122.02	-25.077	-88.294	-9.2662	1632.7	7.8279E+06	7.8279E+06
x(M)	0.1800	8.4600	5.4000	0.0000	0.0000	7.0200	4.1400	8.6400	18.0000	0.0000	0.0000
13	-3.1367E-04	-3.7462E-06	-143.10	-133.27	-112.66	-21.065	-74.142	-7.5629	1661.7	7.8279E+06	7.8279E+06
x(M)	0.1800	8.8200	5.5800	0.0000	0.0000	7.2000	4.1400	9.0000	18.0000	0.0000	0.0000
14	-3.1368E-04	-3.8595E-06	-141.29	-135.18	-111.03	-21.039	-71.883	-7.5168	1630.1	7.8279E+06	7.8279E+06
x(M)	0.1800	9.0000	5.5800	0.0000	0.0000	7.2000	4.1400	9.0000	18.0000	0.0000	0.0000
15	-3.1361E-04	-3.5766E-06	-157.48	-152.56	-126.30	-25.968	-93.639	-9.7006	1598.4	7.8279E+06	7.8279E+06

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	
COMMESSA <b>IF28</b> LOTTO <b>01</b> CODIFICA <b>E ZZ CL</b> DOCUMENTO <b>VI0403 001</b> REV. <b>B</b> FOGLIO <b>120 di 354</b>	

x( M)    0.1800    8.4600    5.4000    0.0000    0.0000    7.0200    4.1400    8.6400    18.000    0.0000    0.0000

Min. -3.1368E-04 -4.0096E-06 -157.48 -155.66 -126.30 -26.960 -95.348 -10.135 1598.4 7.8279E+06 7.8279E+06

Pile N.    14    8    15    3    15    3    3    3    15    1    1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL.	DISPL.	MOMENT		SHEAR		SOIL REACT		SOIL REACT		TOTAL	FLEX. RIG.	FLEX. RIG.
			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	7.3943E-06	1.6229E-04	353.93	70.990	45.544	48.860	16.748	36.641	2945.5	7.8279E+06	7.8279E+06		
x( M)	8.8200	0.0000	0.0000	5.4000	7.2000	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000		
2	7.4553E-06	1.6558E-04	351.19	71.776	44.710	49.370	16.395	36.507	2908.6	7.8279E+06	7.8279E+06		
x( M)	8.8200	0.0000	0.0000	5.4000	7.2000	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000		
3	6.8572E-06	1.6887E-04	375.84	80.213	52.356	56.705	19.863	46.514	2963.4	7.8279E+06	7.8279E+06		
x( M)	8.4600	0.0000	0.0000	5.2200	7.0200	0.0000	8.6400	4.1400	0.0000	0.0000	0.0000		
4	7.9484E-06	1.6229E-04	338.00	65.828	40.334	44.452	14.172	30.472	2856.7	7.8279E+06	7.8279E+06		
x( M)	9.1800	0.0000	0.0000	5.5800	7.3800	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000		
5	8.0288E-06	1.6558E-04	334.82	66.429	39.439	44.798	13.692	30.191	2818.1	7.8279E+06	7.8279E+06		
x( M)	9.1800	0.0000	0.0000	5.5800	7.5600	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000		
6	7.1756E-06	1.6887E-04	368.54	77.051	49.366	53.927	18.489	42.216	2902.6	7.8279E+06	7.8279E+06		
x( M)	8.6400	0.0000	0.0000	5.2200	7.0200	0.0000	8.8200	4.1400	0.0000	0.0000	0.0000		
7	8.0652E-06	1.6229E-04	339.65	65.412	40.288	44.093	14.087	29.956	2826.3	7.8279E+06	7.8279E+06		
x( M)	9.1800	0.0000	0.0000	5.5800	7.3800	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000		
8	8.1381E-06	1.6558E-04	336.57	66.033	39.477	44.464	13.619	29.715	2788.0	7.8279E+06	7.8279E+06		
x( M)	9.1800	0.0000	0.0000	5.5800	7.5600	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000		
9	7.2590E-06	1.6887E-04	371.29	76.781	49.653	53.719	18.583	41.848	2875.5	7.8279E+06	7.8279E+06		
x( M)	8.6400	0.0000	0.0000	5.2200	7.2000	0.0000	8.8200	4.1400	0.0000	0.0000	0.0000		
10	8.1389E-06	1.6229E-04	342.83	65.377	40.699	44.073	14.236	29.891	2800.9	7.8279E+06	7.8279E+06		
x( M)	9.1800	0.0000	0.0000	5.5800	7.3800	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000		
11	8.2123E-06	1.6558E-04	339.74	66.000	39.888	44.446	13.765	29.654	2762.5	7.8279E+06	7.8279E+06		
x( M)	9.1800	0.0000	0.0000	5.5800	7.5600	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000		
12	7.3270E-06	1.6887E-04	374.66	76.693	50.121	53.667	18.762	41.715	2850.5	7.8279E+06	7.8279E+06		
x( M)	8.6400	0.0000	0.0000	5.2200	7.2000	0.0000	8.8200	4.1400	0.0000	0.0000	0.0000		
13	7.9237E-06	1.6229E-04	357.24	68.203	44.389	46.495	16.065	33.119	2812.4	7.8279E+06	7.8279E+06		
x( M)	9.0000	0.0000	0.0000	5.4000	7.3800	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000		
14	8.0035E-06	1.6558E-04	353.89	68.762	43.446	46.855	15.588	32.821	2773.4	7.8279E+06	7.8279E+06		
x( M)	9.0000	0.0000	0.0000	5.4000	7.3800	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000		
15	7.2364E-06	1.6887E-04	384.18	78.323	52.543	55.110	19.787	43.819	2846.0	7.8279E+06	7.8279E+06		
x( M)	8.6400	0.0000	0.0000	5.2200	7.0200	0.0000	8.6400	4.1400	0.0000	0.0000	0.0000		
Max.	8.2123E-06	1.6887E-04	384.18	80.213	52.543	56.705	19.863	46.514	2963.4	7.8279E+06	7.8279E+06		
Pile N.	11	3	15	3	15	3	3	3	1	1			

LOAD CASE : 2  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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	0.5890	1.0000
2	0.5825	1.0000
3	0.8661	1.0000
4	0.4967	1.0000
5	0.4951	1.0000
6	0.8028	1.0000
7	0.4951	1.0000
8	0.4937	1.0000
9	0.8025	1.0000
10	0.4962	1.0000
11	0.4947	1.0000
12	0.8025	1.0000
13	0.5845	1.0000
14	0.5781	1.0000
15	0.8630	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP







\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN    HOR. LOAD Y, KN    HOR. LOAD Z, KN  
44623.0    -6178.97    730.964

MOMENT X, KN- M    MOMENT Y, KN- M    MOMENT Z, KN- M  
-267.113    6103.67    12857.7

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*



<b>APPALTATORE:</b> Consorzio <span style="margin-left: 100px;">Soci</span>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>												
<b>PROGETTAZIONE:</b> Mandataria <span style="margin-left: 100px;">Mandanti</span>   													
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">COMMESSA</td> <td style="width: 10%;">LOTTO</td> <td style="width: 15%;">CODIFICA</td> <td style="width: 15%;">DOCUMENTO</td> <td style="width: 10%;">REV.</td> <td style="width: 35%;">FOGLIO</td> </tr> <tr> <td>IF28</td> <td>01</td> <td>E ZZ CL</td> <td>VI0403 001</td> <td>B</td> <td>121 di 354</td> </tr> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF28	01	E ZZ CL	VI0403 001	B	121 di 354
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO								
IF28	01	E ZZ CL	VI0403 001	B	121 di 354								

VERTICAL , M    HORIZONTAL Y, M    HORIZONTAL Z, M  
 1.73136E-03    -1.84654E-03    2.10733E-04

ANGLE ROT. X,RAD    ANGLE ROT. Y,RAD    ANGLE ROT. Z,RAD  
 -2.69935E-07    9.05506E-06    9.64260E-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

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
1	1.3789E-03	-1.8441E-03	2.0952E-04	-2.6994E-07	9.0551E-06	9.6426E-05
2	1.8128E-03	-1.8441E-03	2.1073E-04	-2.6994E-07	9.0551E-06	9.6426E-05
3	2.2468E-03	-1.8441E-03	2.1195E-04	-2.6994E-07	9.0551E-06	9.6426E-05
4	1.3382E-03	-1.8453E-03	2.0952E-04	-2.6994E-07	9.0551E-06	9.6426E-05
5	1.7721E-03	-1.8453E-03	2.1073E-04	-2.6994E-07	9.0551E-06	9.6426E-05
6	2.2060E-03	-1.8453E-03	2.1195E-04	-2.6994E-07	9.0551E-06	9.6426E-05
7	1.2974E-03	-1.8465E-03	2.0952E-04	-2.6994E-07	9.0551E-06	9.6426E-05
8	1.7314E-03	-1.8465E-03	2.1073E-04	-2.6994E-07	9.0551E-06	9.6426E-05
9	2.1653E-03	-1.8465E-03	2.1195E-04	-2.6994E-07	9.0551E-06	9.6426E-05
10	1.2567E-03	-1.8478E-03	2.0952E-04	-2.6994E-07	9.0551E-06	9.6426E-05
11	1.6906E-03	-1.8478E-03	2.1073E-04	-2.6994E-07	9.0551E-06	9.6426E-05
12	2.1245E-03	-1.8478E-03	2.1195E-04	-2.6994E-07	9.0551E-06	9.6426E-05
13	1.2159E-03	-1.8490E-03	2.0952E-04	-2.6994E-07	9.0551E-06	9.6426E-05
14	1.6499E-03	-1.8490E-03	2.1073E-04	-2.6994E-07	9.0551E-06	9.6426E-05
15	2.0838E-03	-1.8490E-03	2.1195E-04	-2.6994E-07	9.0551E-06	9.6426E-05

MINIMUM    1.2159E-03    -1.8490E-03    2.0952E-04    -2.6994E-07    9.0551E-06    9.6426E-05

PILE N.    13    13    1    1    1    1  
 MAXIMUM    2.2468E-03    -1.8441E-03    2.1195E-04    -2.6994E-07    9.0551E-06    9.6426E-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

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
1	2405.5	-400.90	47.179	-0.089969	-142.81	-1188.8
2	3159.4	-398.47	47.214	-0.089969	-143.29	-1183.9
3	3728.6	-485.49	57.759	-0.089969	-165.69	-1365.2
4	2334.7	-367.84	43.303	-0.089969	-134.31	-1116.8
5	3088.6	-367.06	43.506	-0.089969	-135.14	-1115.4
6	3685.7	-467.96	55.657	-0.089969	-161.42	-1330.1
7	2263.9	-367.53	43.232	-0.089969	-134.14	-1116.3
8	3017.8	-366.78	43.438	-0.089969	-134.98	-1115.1
9	3642.9	-468.20	55.642	-0.089969	-161.38	-1330.9
10	2193.1	-368.18	43.274	-0.089969	-134.23	-1118.1
11	2947.0	-367.43	43.481	-0.089969	-135.07	-1116.8
12	3600.1	-468.53	55.637	-0.089969	-161.37	-1331.9
13	2122.3	-400.50	46.984	-0.089969	-142.36	-1189.1
14	2876.2	-398.06	47.018	-0.089969	-142.83	-1184.2
15	3557.3	-486.01	57.641	-0.089969	-165.43	-1367.7

MINIMUM    2122.3    -486.01    43.232    -0.089969    -165.69    -1367.7

PILE N.    13    15    7    1    3    15  
 MAXIMUM    3728.6    -366.78    57.759    -0.089969    -134.14    -1115.1  
 PILE N.    3    8    3    1    7    8

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP    DISP. x, M    DISP. y, M    DISP. z, M    ROT. x,RAD    ROT. y,RAD    ROT. z,RAD

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
1	1.3789E-03	-1.8441E-03	2.0952E-04	-2.6994E-07	9.0551E-06	9.6426E-05
2	1.8128E-03	-1.8441E-03	2.1073E-04	-2.6994E-07	9.0551E-06	9.6426E-05
3	2.2468E-03	-1.8441E-03	2.1195E-04	-2.6994E-07	9.0551E-06	9.6426E-05
4	1.3382E-03	-1.8453E-03	2.0952E-04	-2.6994E-07	9.0551E-06	9.6426E-05
5	1.7721E-03	-1.8453E-03	2.1073E-04	-2.6994E-07	9.0551E-06	9.6426E-05
6	2.2060E-03	-1.8453E-03	2.1195E-04	-2.6994E-07	9.0551E-06	9.6426E-05
7	1.2974E-03	-1.8465E-03	2.0952E-04	-2.6994E-07	9.0551E-06	9.6426E-05
8	1.7314E-03	-1.8465E-03	2.1073E-04	-2.6994E-07	9.0551E-06	9.6426E-05
9	2.1653E-03	-1.8465E-03	2.1195E-04	-2.6994E-07	9.0551E-06	9.6426E-05
10	1.2567E-03	-1.8478E-03	2.0952E-04	-2.6994E-07	9.0551E-06	9.6426E-05
11	1.6906E-03	-1.8478E-03	2.1073E-04	-2.6994E-07	9.0551E-06	9.6426E-05
12	2.1245E-03	-1.8478E-03	2.1195E-04	-2.6994E-07	9.0551E-06	9.6426E-05
13	1.2159E-03	-1.8490E-03	2.0952E-04	-2.6994E-07	9.0551E-06	9.6426E-05
14	1.6499E-03	-1.8490E-03	2.1073E-04	-2.6994E-07	9.0551E-06	9.6426E-05
15	2.0838E-03	-1.8490E-03	2.1195E-04	-2.6994E-07	9.0551E-06	9.6426E-05

MINIMUM    1.2159E-03    -1.8490E-03    2.0952E-04    -2.6994E-07    9.0551E-06    9.6426E-05

PILE N.    13    13    1    1    1    1  
 MAXIMUM    2.2468E-03    -1.8441E-03    2.1195E-04    -2.6994E-07    9.0551E-06    9.6426E-05  
 PILE N.    3    1    3    1    1    1

\* PILE TOP REACTIONS \*

<b>APPALTATORE:</b> Consorzio  Soci  	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria  Mandanti  	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	
COMMESSA <b>IF28</b> LOTTO <b>01</b> CODIFICA <b>E ZZ CL</b> DOCUMENTO <b>VI0403 001</b> REV. <b>B</b> FOGLIO <b>122 di 354</b>	

PILE GROUP AXIAL, KN    LAT. y, KN    LAT. z, KN    MOM x, KN- M    MOM y, KN- M    MOM z, KN- M

1	2405.5	-400.90	47.179	-0.089969	-142.81	-1188.8
2	3159.4	-398.47	47.214	-0.089969	-143.29	-1183.9
3	3728.6	-485.49	57.759	-0.089969	-165.69	-1365.2
4	2334.7	-367.84	43.303	-0.089969	-134.31	-1116.8
5	3088.6	-367.06	43.506	-0.089969	-135.14	-1115.4
6	3685.7	-467.96	55.657	-0.089969	-161.42	-1330.1
7	2263.9	-367.53	43.232	-0.089969	-134.14	-1116.3
8	3017.8	-366.78	43.438	-0.089969	-134.98	-1115.1
9	3642.9	-468.20	55.642	-0.089969	-161.38	-1330.9
10	2193.1	-368.18	43.274	-0.089969	-134.23	-1118.1
11	2947.0	-367.43	43.481	-0.089969	-135.07	-1116.8
12	3600.1	-468.53	55.637	-0.089969	-161.37	-1331.9
13	2122.3	-400.50	46.984	-0.089969	-142.36	-1189.1
14	2876.2	-398.06	47.018	-0.089969	-142.83	-1184.2
15	3557.3	-486.01	57.641	-0.089969	-165.43	-1367.7
MINIMUM	2122.3	-486.01	43.232	-0.089969	-165.69	-1367.7
Pile N.	13	15	7	1	3	15
MAXIMUM	3728.6	-366.78	57.759	-0.089969	-134.14	-1115.1
Pile N.	3	8	3	1	7	8

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







1	4974.8
2	5387.1
3	6260.3
4	4715.9
5	5138.8
6	6129.4
7	4674.5
8	5097.6
9	6107.7
10	4639.6
11	5062.8
12	6086.5
13	4815.3
14	5227.5
15	6170.8
MINIMUM	4639.6
Pile N.	10
MAXIMUM	6260.3
Pile N.	3

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL.		MOMENT		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			
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2	KN- M**2	KN- M**2		
1	-1.8441E-03	-3.7663E-06	-576.16	-142.81	-400.93	-18.880	-186.78	-5.5859	1361.2	7.8279E+06	7.8279E+06		
x(M)	0.0000	9.9000	6.1200	0.0000	0.0000	8.2800	4.1400	10.260	18.000	0.0000	0.0000		
2	-1.8441E-03	-3.7937E-06	-573.84	-143.29	-398.52	-18.879	-185.03	-5.5637	1787.8	7.8279E+06	7.8279E+06		
x(M)	0.0000	9.9000	6.1200	0.0000	0.0000	8.2800	4.1400	10.260	18.000	0.0000	0.0000		
3	-1.8441E-03	-3.7256E-06	-666.91	-165.69	-485.55	-23.787	-257.99	-8.1343	2109.9	7.8279E+06	7.8279E+06		
x(M)	0.0000	9.1800	5.7600	0.0000	0.0000	7.7400	4.1400	9.5400	18.000	0.0000	0.0000		
4	-1.8453E-03	-3.8130E-06	-539.57	-134.31	-367.87	-17.099	-161.61	-4.7733	1321.2	7.8279E+06	7.8279E+06		
x(M)	0.0000	10.260	6.3000	0.0000	0.0000	8.4600	4.1400	10.620	18.000	0.0000	0.0000		
5	-1.8453E-03	-3.8412E-06	-539.02	-135.14	-367.10	-17.181	-161.16	-4.7916	1747.8	7.8279E+06	7.8279E+06		
x(M)	0.0000	10.260	6.3000	0.0000	0.0000	8.4600	4.1400	10.620	18.000	0.0000	0.0000		
6	-1.8453E-03	-3.7354E-06	-648.75	-161.42	-468.02	-22.747	-242.36	-7.5861	2085.7	7.8279E+06	7.8279E+06		
x(M)	0.0000	9.3600	5.7600	0.0000	0.0000	7.9200	4.1400	9.5400	18.000	0.0000	0.0000		
7	-1.8465E-03	-3.8149E-06	-539.24	-134.14	-367.55	-17.065	-161.25	-4.7589	1281.1	7.8279E+06	7.8279E+06		
x(M)	0.0000	10.260	6.3000	0.0000	0.0000	8.4600	4.1400	10.620	18.000	0.0000	0.0000		
8	-1.8465E-03	-3.8429E-06	-538.72	-134.98	-366.81	-17.148	-160.82	-4.7777	1707.7	7.8279E+06	7.8279E+06		
x(M)	0.0000	10.260	6.3000	0.0000	0.0000	8.4600	4.1400	10.620	18.000	0.0000	0.0000		
9	-1.8465E-03	-3.7349E-06	-649.01	-161.38	-468.26	-22.739	-242.38	-7.5797	2061.5	7.8279E+06	7.8279E+06		
x(M)	0.0000	9.3600	5.7600	0.0000	0.0000	7.9200	4.1400	9.5400	18.000	0.0000	0.0000		
10	-1.8478E-03	-3.8132E-06	-539.96	-134.23	-368.21	-17.082	-161.61	-4.7659	1241.0	7.8279E+06	7.8279E+06		
x(M)	0.0000	10.260	6.3000	0.0000	0.0000	8.4600	4.1400	10.620	18.000	0.0000	0.0000		
11	-1.8478E-03	-3.8412E-06	-539.44	-135.07	-367.47	-17.165	-161.18	-4.7848	1667.6	7.8279E+06	7.8279E+06		
x(M)	0.0000	10.260	6.3000	0.0000	0.0000	8.4600	4.1400	10.620	18.000	0.0000	0.0000		
12	-1.8478E-03	-3.7344E-06	-649.37	-161.37	-468.59	-22.735	-242.49	-7.5763	2037.2	7.8279E+06	7.8279E+06		
x(M)	0.0000	9.3600	5.7600	0.0000	0.0000	7.9200	4.1400	9.5400	18.000	0.0000	0.0000		
13	-1.8490E-03	-3.7654E-06	-575.76	-142.36	-400.53	-18.776	-185.90	-5.5367	1201.0	7.8279E+06	7.8279E+06		
x(M)	0.0000	9.9000	6.1200	0.0000	0.0000	8.2800	4.1400	10.260	18.000	0.0000	0.0000		
14	-1.8490E-03	-3.7924E-06	-573.43	-142.83	-398.10	-18.774	-184.15	-5.5141	1627.6	7.8279E+06	7.8279E+06		
x(M)	0.0000	9.9000	6.1200	0.0000	0.0000	8.2800	4.1400	10.260	18.000	0.0000	0.0000		
15	-1.8490E-03	-3.7216E-06	-667.56	-165.43	-486.07	-23.716	-257.69	-8.1085	2013.0	7.8279E+06	7.8279E+06		
x(M)	0.0000	9.1800	5.7600	0.0000	0.0000	7.7400	4.1400	9.5400	18.000	0.0000	0.0000		
Min.	-1.8490E-03	-3.8429E-06	-667.56	-165.69	-486.07	-23.787	-257.99	-8.1343	1201.0	7.8279E+06	7.8279E+06		
Pile N.	13	8	15	3	15	3	3	13	1	1			

\* MAXIMUM VALUES AND LOCATIONS \*

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	

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	3.2717E-05	2.0952E-04	1188.8	66.192	163.68	47.183	48.378	21.686	4974.8	7.8279E+06	7.8279E+06
x(M)	9.9000	0.0000	0.0000	6.1200	8.2800	0.0000	10.260	4.1400	0.0000	0.0000	0.0000
2	3.2760E-05	2.1073E-04	1183.9	66.323	162.68	47.219	47.893	21.621	5387.1	7.8279E+06	7.8279E+06
x(M)	9.9000	0.0000	0.0000	6.1200	8.2800	0.0000	10.260	4.1400	0.0000	0.0000	0.0000
3	3.2002E-05	2.1195E-04	1365.2	77.529	203.94	57.766	69.742	30.318	6260.3	7.8279E+06	7.8279E+06
x(M)	9.1800	0.0000	0.0000	5.7600	7.7400	0.0000	9.3600	4.1400	0.0000	0.0000	0.0000
4	3.3152E-05	2.0952E-04	1116.8	61.959	148.39	43.307	41.344	18.755	4715.9	7.8279E+06	7.8279E+06
x(M)	10.080	0.0000	0.0000	6.3000	8.4600	0.0000	10.620	4.1400	0.0000	0.0000	0.0000
5	3.3181E-05	2.1073E-04	1115.4	62.272	148.19	43.511	41.246	18.823	5138.8	7.8279E+06	7.8279E+06
x(M)	10.080	0.0000	0.0000	6.3000	8.4600	0.0000	10.620	4.1400	0.0000	0.0000	0.0000
6	3.2090E-05	2.1195E-04	1330.1	75.323	194.95	55.664	65.061	28.463	6129.4	7.8279E+06	7.8279E+06
x(M)	9.3600	0.0000	0.0000	5.7600	7.9200	0.0000	9.5400	4.1400	0.0000	0.0000	0.0000
7	3.3178E-05	2.0952E-04	1116.3	61.877	148.21	43.235	41.250	18.699	4674.5	7.8279E+06	7.8279E+06
x(M)	10.080	0.0000	0.0000	6.3000	8.4600	0.0000	10.620	4.1400	0.0000	0.0000	0.0000
8	3.3206E-05	2.1073E-04	1115.1	62.193	148.02	43.443	41.157	18.769	5097.6	7.8279E+06	7.8279E+06
x(M)	10.080	0.0000	0.0000	6.3000	8.4600	0.0000	10.620	4.1400	0.0000	0.0000	0.0000
9	3.2109E-05	2.1195E-04	1330.9	75.301	195.02	55.648	65.053	28.445	6107.7	7.8279E+06	7.8279E+06
x(M)	9.3600	0.0000	0.0000	5.7600	7.9200	0.0000	9.5400	4.1400	0.0000	0.0000	0.0000
10	3.3193E-05	2.0952E-04	1118.1	61.916	148.46	43.277	41.341	18.727	4639.6	7.8279E+06	7.8279E+06
x(M)	10.080	0.0000	0.0000	6.3000	8.4600	0.0000	10.620	4.1400	0.0000	0.0000	0.0000
11	3.3222E-05	2.1073E-04	1116.8	62.234	148.27	43.485	41.248	18.797	5062.8	7.8279E+06	7.8279E+06
x(M)	10.080	0.0000	0.0000	6.3000	8.4600	0.0000	10.620	4.1400	0.0000	0.0000	0.0000
12	3.2127E-05	2.1195E-04	1331.9	75.290	195.13	55.644	65.071	28.437	6086.5	7.8279E+06	7.8279E+06
x(M)	9.3600	0.0000	0.0000	5.7600	7.9200	0.0000	9.5400	4.1400	0.0000	0.0000	0.0000
13	3.2807E-05	2.0952E-04	1189.1	65.957	163.26	46.988	48.095	21.521	4815.3	7.8279E+06	7.8279E+06
x(M)	9.9000	0.0000	0.0000	6.1200	8.2800	0.0000	10.260	4.1400	0.0000	0.0000	0.0000
14	3.2847E-05	2.1073E-04	1184.2	66.085	162.26	47.023	47.608	21.455	5227.5	7.8279E+06	7.8279E+06
x(M)	9.9000	0.0000	0.0000	6.1200	8.2800	0.0000	10.260	4.1400	0.0000	0.0000	0.0000
15	3.2061E-05	2.1195E-04	1367.7	77.385	203.93	57.648	69.678	30.193	6170.8	7.8279E+06	7.8279E+06
x(M)	9.1800	0.0000	0.0000	5.7600	7.7400	0.0000	9.3600	4.1400	0.0000	0.0000	0.0000
Max.	3.3222E-05	2.1195E-04	1367.7	77.529	203.94	57.766	69.742	30.318	6260.3	7.8279E+06	7.8279E+06
Pile N.	11	3	15	3	3	3	3	3	1	1	

LOAD CASE : 3  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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	0.5884	1.0000
2	0.5821	1.0000
3	0.8661	1.0000
4	0.4965	1.0000
5	0.4951	1.0000
6	0.8031	1.0000
7	0.4951	1.0000
8	0.4937	1.0000
9	0.8029	1.0000
10	0.4961	1.0000
11	0.4948	1.0000
12	0.8029	1.0000
13	0.5845	1.0000
14	0.5782	1.0000
15	0.8634	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*







VERT. LOAD, KN    HOR. LOAD Y, KN    HOR. LOAD Z, KN  
41839.6    -5525.43    603.246

MOMENT X, KN-M    MOMENT Y, KN-M    MOMENT Z, KN-M  
-119.238    3555.75    4935.44

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL, M    HORIZONTAL Y, M    HORIZONTAL Z, M  
1.59986E-03    -1.51490E-03    1.60536E-04

ANGLE ROT. X,RAD    ANGLE ROT. Y,RAD    ANGLE ROT. Z,RAD  
4.29709E-07    5.11248E-06    6.11315E-05

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>				
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>					
<b>COMMESSA</b> <b>IF28</b>	<b>LOTTO</b> <b>01</b>	<b>CODIFICA</b> <b>E ZZ CL</b>	<b>DOCUMENTO</b> <b>VI0403 001</b>	<b>REV.</b> <b>B</b>	<b>FOGLIO</b> <b>124 di 354</b>

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

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
1	1.3708E-03	-1.5188E-03	1.6247E-04	4.2971E-07	5.1125E-06	6.1132E-05
2	1.6459E-03	-1.5188E-03	1.6054E-04	4.2971E-07	5.1125E-06	6.1132E-05
3	1.9210E-03	-1.5188E-03	1.5860E-04	4.2971E-07	5.1125E-06	6.1132E-05
4	1.3478E-03	-1.5168E-03	1.6247E-04	4.2971E-07	5.1125E-06	6.1132E-05
5	1.6229E-03	-1.5168E-03	1.6054E-04	4.2971E-07	5.1125E-06	6.1132E-05
6	1.8980E-03	-1.5168E-03	1.5860E-04	4.2971E-07	5.1125E-06	6.1132E-05
7	1.3248E-03	-1.5149E-03	1.6247E-04	4.2971E-07	5.1125E-06	6.1132E-05
8	1.5999E-03	-1.5149E-03	1.6054E-04	4.2971E-07	5.1125E-06	6.1132E-05
9	1.8750E-03	-1.5149E-03	1.5860E-04	4.2971E-07	5.1125E-06	6.1132E-05
10	1.3018E-03	-1.5130E-03	1.6247E-04	4.2971E-07	5.1125E-06	6.1132E-05
11	1.5769E-03	-1.5130E-03	1.6054E-04	4.2971E-07	5.1125E-06	6.1132E-05
12	1.8519E-03	-1.5130E-03	1.5860E-04	4.2971E-07	5.1125E-06	6.1132E-05
13	1.2787E-03	-1.5110E-03	1.6247E-04	4.2971E-07	5.1125E-06	6.1132E-05
14	1.5539E-03	-1.5110E-03	1.6054E-04	4.2971E-07	5.1125E-06	6.1132E-05
15	1.8289E-03	-1.5110E-03	1.5860E-04	4.2971E-07	5.1125E-06	6.1132E-05

MINIMUM 1.2787E-03 -1.5188E-03 1.5860E-04 4.2971E-07 5.1125E-06 6.1132E-05

PILE N. 13 1 3 1 1 1  
 MAXIMUM 1.9210E-03 -1.5110E-03 1.6247E-04 4.2971E-07 5.1125E-06 6.1132E-05  
 PILE N. 3 13 1 1 1 1

\* PILE TOP REACTIONS \*

PILE GROUP FOR. X, KN FOR. Y, KN FOR. Z, KN MOM X, KN- M MOM Y, KN- M MOM Z, KN- M

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
1	2391.3	-354.54	39.174	0.1432	-120.91	-1075.3
2	2869.2	-352.58	38.443	0.1432	-118.79	-1071.3
3	3347.2	-442.97	47.547	0.1432	-138.00	-1267.2
4	2351.3	-325.64	36.069	0.1432	-114.11	-1011.6
5	2829.3	-325.10	35.531	0.1432	-112.40	-1010.6
6	3307.2	-428.96	46.126	0.1432	-135.25	-1239.5
7	2311.4	-324.77	36.026	0.1432	-114.02	-1009.2
8	2789.3	-324.24	35.490	0.1432	-112.31	-1008.2
9	3267.2	-428.36	46.128	0.1432	-135.26	-1237.6
10	2271.4	-324.71	36.072	0.1432	-114.12	-1008.5
11	2749.3	-324.19	35.536	0.1432	-112.41	-1007.6
12	3227.3	-427.81	46.137	0.1432	-135.28	-1235.9
13	2231.4	-351.67	39.087	0.1432	-120.73	-1066.9
14	2709.4	-349.71	38.357	0.1432	-118.61	-1062.9
15	3187.3	-440.17	47.523	0.1432	-137.95	-1259.0

MINIMUM 2231.4 -442.97 35.490 0.1432 -138.00 -1267.2

PILE N. 13 3 8 1 3 3  
 MAXIMUM 3347.2 -324.19 47.547 0.1432 -112.31 -1007.6  
 PILE N. 3 11 3 1 8 11

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP DISP. x, M DISP. y, M DISP. z, M ROT. x,RAD ROT. y,RAD ROT. z,RAD

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
1	1.3708E-03	-1.5188E-03	1.6247E-04	4.2971E-07	5.1125E-06	6.1132E-05
2	1.6459E-03	-1.5188E-03	1.6054E-04	4.2971E-07	5.1125E-06	6.1132E-05
3	1.9210E-03	-1.5188E-03	1.5860E-04	4.2971E-07	5.1125E-06	6.1132E-05
4	1.3478E-03	-1.5168E-03	1.6247E-04	4.2971E-07	5.1125E-06	6.1132E-05
5	1.6229E-03	-1.5168E-03	1.6054E-04	4.2971E-07	5.1125E-06	6.1132E-05
6	1.8980E-03	-1.5168E-03	1.5860E-04	4.2971E-07	5.1125E-06	6.1132E-05
7	1.3248E-03	-1.5149E-03	1.6247E-04	4.2971E-07	5.1125E-06	6.1132E-05
8	1.5999E-03	-1.5149E-03	1.6054E-04	4.2971E-07	5.1125E-06	6.1132E-05
9	1.8750E-03	-1.5149E-03	1.5860E-04	4.2971E-07	5.1125E-06	6.1132E-05
10	1.3018E-03	-1.5130E-03	1.6247E-04	4.2971E-07	5.1125E-06	6.1132E-05
11	1.5769E-03	-1.5130E-03	1.6054E-04	4.2971E-07	5.1125E-06	6.1132E-05
12	1.8519E-03	-1.5130E-03	1.5860E-04	4.2971E-07	5.1125E-06	6.1132E-05
13	1.2787E-03	-1.5110E-03	1.6247E-04	4.2971E-07	5.1125E-06	6.1132E-05
14	1.5539E-03	-1.5110E-03	1.6054E-04	4.2971E-07	5.1125E-06	6.1132E-05
15	1.8289E-03	-1.5110E-03	1.5860E-04	4.2971E-07	5.1125E-06	6.1132E-05

MINIMUM 1.2787E-03 -1.5188E-03 1.5860E-04 4.2971E-07 5.1125E-06 6.1132E-05

PILE N. 13 1 3 1 1 1  
 MAXIMUM 1.9210E-03 -1.5110E-03 1.6247E-04 4.2971E-07 5.1125E-06 6.1132E-05  
 PILE N. 3 13 1 1 1 1

\* PILE TOP REACTIONS \*

PILE GROUP AXIAL, KN LAT. y, KN LAT. z, KN MOM x, KN- M MOM y, KN- M MOM z, KN- M

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	2391.3	-354.54	39.174	0.1432	-120.91	-1075.3
2	2869.2	-352.58	38.443	0.1432	-118.79	-1071.3
3	3347.2	-442.97	47.547	0.1432	-138.00	-1267.2

<b>APPALTATORE:</b> Consorzio  Soci  	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria  Mandanti  	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	

4	2351.3	-325.64	36.069	0.1432	-114.11	-1011.6
5	2829.3	-325.10	35.531	0.1432	-112.40	-1010.6
6	3307.2	-428.96	46.126	0.1432	-135.25	-1239.5
7	2311.4	-324.77	36.026	0.1432	-114.02	-1009.2
8	2789.3	-324.24	35.490	0.1432	-112.31	-1008.2
9	3267.2	-428.36	46.128	0.1432	-135.26	-1237.6
10	2271.4	-324.71	36.072	0.1432	-114.12	-1008.5
11	2749.3	-324.19	35.536	0.1432	-112.41	-1007.6
12	3227.3	-427.81	46.137	0.1432	-135.28	-1235.9
13	2231.4	-351.67	39.087	0.1432	-120.73	-1066.9
14	2709.4	-349.71	38.357	0.1432	-118.61	-1062.9
15	3187.3	-440.17	47.523	0.1432	-137.95	-1259.0

MINIMUM	2231.4	-442.97	35.490	0.1432	-138.00	-1267.2
Pile N.	13	3	8	1	3	3
MAXIMUM	3347.2	-324.19	47.547	0.1432	-112.31	-1007.6
Pile N.	3	11	3	1	8	11

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

1	4619.0
2	4876.7
3	5741.2
4	4403.1
5	4670.0
6	5634.6
7	4373.0
8	4640.1
9	5606.4
10	4348.5
11	4615.5
12	5578.5
13	4503.2
14	4761.0
15	5626.0

MINIMUM	4348.5
Pile N.	10
MAXIMUM	5741.2
Pile N.	3







\* 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	z-DIR	y-DIR	KN- M**2	KN- M**2
M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M	KN/ M**2	KN- M**2	KN- M**2
1	-1.5188E-03	-2.9960E-06	-494.27	-120.91	-354.57	-15.383	-170.12	-4.7265	1353.2	7.8279E+06	7.8279E+06
x(M)	0.0000	9.7200	6.1200	0.0000	0.0000	8.2800	4.1400	10.080	18.000	0.0000	0.0000
2	-1.5188E-03	-2.9619E-06	-492.37	-118.79	-352.61	-15.111	-168.58	-4.6301	1623.7	7.8279E+06	7.8279E+06
x(M)	0.0000	9.9000	6.1200	0.0000	0.0000	8.2800	4.1400	10.080	18.000	0.0000	0.0000
3	-1.5188E-03	-3.2812E-06	-606.85	-138.00	-443.01	-20.437	-246.28	-6.9425	1894.1	7.8279E+06	7.8279E+06
x(M)	0.0000	9.0000	5.5800	0.0000	0.0000	7.3800	4.1400	9.1800	18.000	0.0000	0.0000
4	-1.5168E-03	-3.0213E-06	-462.45	-114.11	-325.67	-13.987	-147.21	-4.0722	1330.6	7.8279E+06	7.8279E+06
x(M)	0.0000	10.080	6.1200	0.0000	0.0000	8.4600	4.1400	10.440	18.000	0.0000	0.0000
5	-1.5168E-03	-2.9855E-06	-461.98	-112.40	-325.13	-13.793	-146.85	-4.0113	1601.0	7.8279E+06	7.8279E+06
x(M)	0.0000	10.080	6.3000	0.0000	0.0000	8.4600	4.1400	10.440	18.000	0.0000	0.0000
6	-1.5168E-03	-3.3338E-06	-594.29	-135.25	-429.01	-19.762	-232.43	-6.5924	1871.5	7.8279E+06	7.8279E+06
x(M)	0.0000	9.0000	5.7600	0.0000	0.0000	7.5600	4.1400	9.1800	18.000	0.0000	0.0000
7	-1.5149E-03	-3.0223E-06	-461.39	-114.02	-324.79	-13.967	-146.72	-4.0635	1308.0	7.8279E+06	7.8279E+06
x(M)	0.0000	10.080	6.1200	0.0000	0.0000	8.4600	4.1400	10.440	18.000	0.0000	0.0000
8	-1.5149E-03	-2.9864E-06	-460.99	-112.31	-324.28	-13.775	-146.38	-4.0032	1578.4	7.8279E+06	7.8279E+06
x(M)	0.0000	10.080	6.3000	0.0000	0.0000	8.4600	4.1400	10.440	18.000	0.0000	0.0000
9	-1.5149E-03	-3.3341E-06	-593.54	-135.26	-428.41	-19.763	-232.18	-6.5909	1848.9	7.8279E+06	7.8279E+06
x(M)	0.0000	9.0000	5.7600	0.0000	0.0000	7.5600	4.1400	9.1800	18.000	0.0000	0.0000
10	-1.5130E-03	-3.0225E-06	-461.29	-114.12	-324.74	-13.988	-146.86	-4.0746	1285.4	7.8279E+06	7.8279E+06
x(M)	0.0000	10.080	6.1200	0.0000	0.0000	8.4600	4.1400	10.440	18.000	0.0000	0.0000
11	-1.5130E-03	-2.9866E-06	-460.85	-112.41	-324.22	-13.796	-146.53	-4.0142	1555.8	7.8279E+06	7.8279E+06
x(M)	0.0000	10.080	6.1200	0.0000	0.0000	8.4600	4.1400	10.440	18.000	0.0000	0.0000
12	-1.5130E-03	-3.3343E-06	-592.83	-135.28	-427.86	-19.767	-231.98	-6.5910	1826.3	7.8279E+06	7.8279E+06
x(M)	0.0000	9.0000	5.7600	0.0000	0.0000	7.5600	4.1400	9.1800	18.000	0.0000	0.0000
13	-1.5110E-03	-3.0000E-06	-490.89	-120.73	-351.70	-15.346	-168.63	-4.7061	1262.7	7.8279E+06	7.8279E+06
x(M)	0.0000	9.9000	6.1200	0.0000	0.0000	8.2800	4.1400	10.080	18.000	0.0000	0.0000
14	-1.5110E-03	-2.9668E-06	-489.00	-118.61	-349.75	-15.074	-167.10	-4.6098	1533.2	7.8279E+06	7.8279E+06
x(M)	0.0000	9.9000	6.1200	0.0000	0.0000	8.2800	4.1400	10.080	18.000	0.0000	0.0000
15	-1.5110E-03	-3.2838E-06	-603.53	-137.95	-440.21	-20.427	-244.89	-6.9280	1803.6	7.8279E+06	7.8279E+06
x(M)	0.0000	9.0000	5.5800	0.0000	0.0000	7.3800	4.1400	9.1800	18.000	0.0000	0.0000
Min.	-1.5188E-03	-3.3343E-06	-606.85	-138.00	-443.01	-20.437	-246.28	-6.9425	1262.7	7.8279E+06	7.8279E+06
Pile N.	1	12	3	3	3	3	3	13	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	z-DIR	y-DIR	KN- M**2	KN- M**2
M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M	KN/ M**2	KN- M**2	KN- M**2
1	2.7680E-05	1.6247E-04	1075.3	53.463	141.84	39.177	43.537	18.572	4619.0	7.8279E+06	7.8279E+06

<b>APPALTATORE:</b> Consorzio  Soci  	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>				
<b>PROGETTAZIONE:</b> Mandataria  Mandanti  					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>					
COMMESSA <b>IF28</b>	LOTTO <b>01</b>	CODIFICA <b>E ZZ CL</b>	DOCUMENTO <b>VI0403 001</b>	REV. <b>B</b>	FOGLIO <b>126 di 354</b>

x(M)	9.7200	0.0000	0.0000	6.1200	8.1000	0.0000	10.080	4.1400	0.0000	0.0000	0.0000
2	2.7681E-05	1.6054E-04	1071.3	52.596	140.96	38.447	43.194	18.169	4876.7	7.8279E+06	7.8279E+06
x(M)	9.7200	0.0000	0.0000	6.1200	8.2800	0.0000	10.080	4.1400	0.0000	0.0000	0.0000
3	3.1066E-05	1.5860E-04	1267.2	63.996	193.45	47.552	65.659	26.182	5741.2	7.8279E+06	7.8279E+06
x(M)	9.0000	0.0000	0.0000	5.7600	7.3800	0.0000	9.1800	4.1400	0.0000	0.0000	0.0000
4	2.7856E-05	1.6247E-04	1011.6	50.096	128.68	36.072	37.436	16.097	4403.1	7.8279E+06	7.8279E+06
x(M)	10.080	0.0000	0.0000	6.3000	8.4600	0.0000	10.440	4.1400	0.0000	0.0000	0.0000
5	2.7873E-05	1.6054E-04	1010.6	49.429	128.52	35.534	37.346	15.854	4670.0	7.8279E+06	7.8279E+06
x(M)	10.080	0.0000	0.0000	6.3000	8.4600	0.0000	10.440	4.1400	0.0000	0.0000	0.0000
6	3.1543E-05	1.5860E-04	1239.5	62.800	186.65	46.131	62.301	24.745	5634.6	7.8279E+06	7.8279E+06
x(M)	9.0000	0.0000	0.0000	5.7600	7.5600	0.0000	9.1800	4.1400	0.0000	0.0000	0.0000
7	2.7829E-05	1.6247E-04	1009.2	50.052	128.33	36.029	37.306	16.066	4373.0	7.8279E+06	7.8279E+06
x(M)	10.080	0.0000	0.0000	6.3000	8.4600	0.0000	10.440	4.1400	0.0000	0.0000	0.0000
8	2.7845E-05	1.6054E-04	1008.2	49.388	128.18	35.494	37.221	15.825	4640.1	7.8279E+06	7.8279E+06
x(M)	10.080	0.0000	0.0000	6.3000	8.4600	0.0000	10.440	4.1400	0.0000	0.0000	0.0000
9	3.1504E-05	1.5860E-04	1237.6	62.805	186.41	46.134	62.202	24.752	5606.4	7.8279E+06	7.8279E+06
x(M)	9.0000	0.0000	0.0000	5.7600	7.5600	0.0000	9.1800	4.1400	0.0000	0.0000	0.0000
10	2.7792E-05	1.6247E-04	1008.5	50.103	128.34	36.075	37.356	16.104	4348.5	7.8279E+06	7.8279E+06
x(M)	10.080	0.0000	0.0000	6.3000	8.4600	0.0000	10.440	4.1400	0.0000	0.0000	0.0000
11	2.7808E-05	1.6054E-04	1007.6	49.439	128.19	35.539	37.271	15.863	4615.5	7.8279E+06	7.8279E+06
x(M)	10.080	0.0000	0.0000	6.3000	8.4600	0.0000	10.440	4.1400	0.0000	0.0000	0.0000
12	3.1463E-05	1.5860E-04	1235.9	62.815	186.19	46.142	62.118	24.766	5578.5	7.8279E+06	7.8279E+06
x(M)	9.0000	0.0000	0.0000	5.7600	7.5600	0.0000	9.1800	4.1400	0.0000	0.0000	0.0000
13	2.7561E-05	1.6247E-04	1066.9	53.382	140.67	39.090	43.115	18.513	4503.2	7.8279E+06	7.8279E+06
x(M)	9.7200	0.0000	0.0000	6.1200	8.1000	0.0000	10.080	4.1400	0.0000	0.0000	0.0000
14	2.7566E-05	1.6054E-04	1062.9	52.515	139.86	38.360	42.773	18.111	4761.0	7.8279E+06	7.8279E+06
x(M)	9.0000	0.0000	0.0000	6.1200	8.2800	0.0000	10.080	4.1400	0.0000	0.0000	0.0000
15	3.0924E-05	1.5860E-04	1259.0	63.988	192.32	47.528	65.168	26.179	5626.0	7.8279E+06	7.8279E+06
x(M)	9.0000	0.0000	0.0000	5.7600	7.3800	0.0000	9.1800	4.1400	0.0000	0.0000	0.0000
Max.	3.1543E-05	1.6247E-04	1267.2	63.996	193.45	47.552	65.659	26.182	5741.2	7.8279E+06	7.8279E+06
Pile N.	6	1	3	3	3	3	3	3	1	1	

LOAD CASE : 4  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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	0.5949	1.0000
2	0.5871	1.0000
3	0.8661	1.0000
4	0.4982	1.0000
5	0.4951	1.0000
6	0.7994	1.0000
7	0.4960	1.0000
8	0.4931	1.0000
9	0.7987	1.0000
10	0.4971	1.0000
11	0.4942	1.0000
12	0.7987	1.0000
13	0.5845	1.0000
14	0.5768	1.0000
15	0.8590	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN HOR. LOAD Y, KN HOR. LOAD Z, KN  
45447.6 -5912.75 1025.26

MOMENT X, KN- M MOMENT Y, KN- M MOMENT Z, KN- M  
-182.035 9631.34 5770.67







\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL, M HORIZONTAL Y, M HORIZONTAL Z, M  
1.75144E-03 -1.67580E-03 2.94966E-04

ANGLE ROT. X,RAD ANGLE ROT. Y,RAD ANGLE ROT. Z,RAD  
5.26233E-07 1.36430E-05 7.11715E-05

THE GLOBAL STRUCTURAL COORDINATE SYSTEM

\* PILE TOP DISPLACEMENTS \*

<b>APPALTATORE:</b> Consorzio  Soci  	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>												
<b>PROGETTAZIONE:</b> Mandataria  Mandanti  													
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	<table border="1"> <tr> <td>COMMESSA</td> <td>LOTTO</td> <td>CODIFICA</td> <td>DOCUMENTO</td> <td>REV.</td> <td>FOGLIO</td> </tr> <tr> <td>IF28</td> <td>01</td> <td>E ZZ CL</td> <td>VI0403 001</td> <td>B</td> <td>127 di 354</td> </tr> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF28	01	E ZZ CL	VI0403 001	B	127 di 354
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO								
IF28	01	E ZZ CL	VI0403 001	B	127 di 354								

PILE GROUP DISP. X, M DISP. Y, M DISP. Z, M ROT. X,RAD ROT. Y,RAD ROT. Z,RAD

1	1.5539E-03	-1.6805E-03	2.9733E-04	5.2623E-07	1.3643E-05	7.1171E-05
2	1.8742E-03	-1.6805E-03	2.9497E-04	5.2623E-07	1.3643E-05	7.1171E-05
3	2.1945E-03	-1.6805E-03	2.9260E-04	5.2623E-07	1.3643E-05	7.1171E-05
4	1.4926E-03	-1.6782E-03	2.9733E-04	5.2623E-07	1.3643E-05	7.1171E-05
5	1.8128E-03	-1.6782E-03	2.9497E-04	5.2623E-07	1.3643E-05	7.1171E-05
6	2.1331E-03	-1.6782E-03	2.9260E-04	5.2623E-07	1.3643E-05	7.1171E-05
7	1.4312E-03	-1.6758E-03	2.9733E-04	5.2623E-07	1.3643E-05	7.1171E-05
8	1.7514E-03	-1.6758E-03	2.9497E-04	5.2623E-07	1.3643E-05	7.1171E-05
9	2.0717E-03	-1.6758E-03	2.9260E-04	5.2623E-07	1.3643E-05	7.1171E-05
10	1.3698E-03	-1.6734E-03	2.9733E-04	5.2623E-07	1.3643E-05	7.1171E-05
11	1.6900E-03	-1.6734E-03	2.9497E-04	5.2623E-07	1.3643E-05	7.1171E-05
12	2.0103E-03	-1.6734E-03	2.9260E-04	5.2623E-07	1.3643E-05	7.1171E-05
13	1.3084E-03	-1.6711E-03	2.9733E-04	5.2623E-07	1.3643E-05	7.1171E-05
14	1.6286E-03	-1.6711E-03	2.9497E-04	5.2623E-07	1.3643E-05	7.1171E-05
15	1.9489E-03	-1.6711E-03	2.9260E-04	5.2623E-07	1.3643E-05	7.1171E-05

MINIMUM	1.3084E-03	-1.6805E-03	2.9260E-04	5.2623E-07	1.3643E-05	7.1171E-05
Pile N.	13	1	3	1	1	1
MAXIMUM	2.1945E-03	-1.6711E-03	2.9733E-04	5.2623E-07	1.3643E-05	7.1171E-05
Pile N.	3	13	1	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP FOR. X, KN FOR. Y, KN FOR. Z, KN MOM X, KN- M MOM Y, KN- M MOM Z, KN- M

1	2709.6	-384.89	67.187	0.1754	-201.62	-1163.9
2	3266.0	-382.27	66.103	0.1754	-198.64	-1158.5
3	3673.6	-480.68	82.434	0.1754	-233.50	-1373.0
4	2602.9	-351.78	61.482	0.1754	-189.15	-1090.8
5	3159.3	-350.57	60.693	0.1754	-186.79	-1088.4
6	3609.1	-444.12	76.263	0.1754	-219.22	-1287.7
7	2496.2	-350.54	61.365	0.1754	-188.88	-1087.3
8	3052.7	-349.40	60.589	0.1754	-186.55	-1085.1
9	3544.6	-443.32	76.249	0.1754	-219.19	-1285.3
10	2389.6	-350.43	61.449	0.1754	-189.06	-1086.4
11	2946.0	-349.30	60.671	0.1754	-186.73	-1084.2
12	3480.1	-442.71	76.269	0.1754	-219.24	-1283.3
13	2282.9	-379.51	66.682	0.1754	-200.52	-1149.5
14	2839.3	-376.89	65.598	0.1754	-197.54	-1144.1
15	3395.7	-476.35	82.222	0.1754	-233.10	-1361.1

MINIMUM	2282.9	-480.68	60.589	0.1754	-233.50	-1373.0
Pile N.	13	3	8	1	3	3
MAXIMUM	3673.6	-349.30	82.434	0.1754	-186.55	-1084.2
Pile N.	3	11	3	1	8	11

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP DISP. x, M DISP. y, M DISP. z, M ROT. x,RAD ROT. y,RAD ROT. z,RAD

1	1.5539E-03	-1.6805E-03	2.9733E-04	5.2623E-07	1.3643E-05	7.1171E-05
2	1.8742E-03	-1.6805E-03	2.9497E-04	5.2623E-07	1.3643E-05	7.1171E-05
3	2.1945E-03	-1.6805E-03	2.9260E-04	5.2623E-07	1.3643E-05	7.1171E-05
4	1.4926E-03	-1.6782E-03	2.9733E-04	5.2623E-07	1.3643E-05	7.1171E-05
5	1.8128E-03	-1.6782E-03	2.9497E-04	5.2623E-07	1.3643E-05	7.1171E-05
6	2.1331E-03	-1.6782E-03	2.9260E-04	5.2623E-07	1.3643E-05	7.1171E-05
7	1.4312E-03	-1.6758E-03	2.9733E-04	5.2623E-07	1.3643E-05	7.1171E-05
8	1.7514E-03	-1.6758E-03	2.9497E-04	5.2623E-07	1.3643E-05	7.1171E-05
9	2.0717E-03	-1.6758E-03	2.9260E-04	5.2623E-07	1.3643E-05	7.1171E-05
10	1.3698E-03	-1.6734E-03	2.9733E-04	5.2623E-07	1.3643E-05	7.1171E-05
11	1.6900E-03	-1.6734E-03	2.9497E-04	5.2623E-07	1.3643E-05	7.1171E-05
12	2.0103E-03	-1.6734E-03	2.9260E-04	5.2623E-07	1.3643E-05	7.1171E-05
13	1.3084E-03	-1.6711E-03	2.9733E-04	5.2623E-07	1.3643E-05	7.1171E-05
14	1.6286E-03	-1.6711E-03	2.9497E-04	5.2623E-07	1.3643E-05	7.1171E-05
15	1.9489E-03	-1.6711E-03	2.9260E-04	5.2623E-07	1.3643E-05	7.1171E-05

MINIMUM	1.3084E-03	-1.6805E-03	2.9260E-04	5.2623E-07	1.3643E-05	7.1171E-05
Pile N.	13	1	3	1	1	1
MAXIMUM	2.1945E-03	-1.6711E-03	2.9733E-04	5.2623E-07	1.3643E-05	7.1171E-05
Pile N.	3	13	1	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP AXIAL, KN LAT. y, KN LAT. z, KN MOM x, KN- M MOM y, KN- M MOM z, KN- M

1	2709.6	-384.89	67.187	0.1754	-201.62	-1163.9
2	3266.0	-382.27	66.103	0.1754	-198.64	-1158.5
3	3673.6	-480.68	82.434	0.1754	-233.50	-1373.0
4	2602.9	-351.78	61.482	0.1754	-189.15	-1090.8
5	3159.3	-350.57	60.693	0.1754	-186.79	-1088.4
6	3609.1	-444.12	76.263	0.1754	-219.22	-1287.7
7	2496.2	-350.54	61.365	0.1754	-188.88	-1087.3
8	3052.7	-349.40	60.589	0.1754	-186.55	-1085.1
9	3544.6	-443.32	76.249	0.1754	-219.19	-1285.3

<b>APPALTATORE:</b> Consorzio <b>Soci</b> 		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>			
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b> 					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>					
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO
IF28	01	E ZZ CL	VI0403 001	B	128 di 354

10	2389.6	-350.43	61.449	0.1754	-189.06	-1086.4
11	2946.0	-349.30	60.671	0.1754	-186.73	-1084.2
12	3480.1	-442.71	76.269	0.1754	-219.24	-1283.3
13	2282.9	-379.51	66.682	0.1754	-200.52	-1149.5
14	2839.3	-376.89	65.598	0.1754	-197.54	-1144.1
15	3395.7	-476.35	82.222	0.1754	-233.10	-1361.1

MINIMUM	2282.9	-480.68	60.589	0.1754	-233.50	-1373.0
Pile N.	13	3	8	1	3	3
MAXIMUM	3673.6	-349.30	82.434	0.1754	-186.55	-1084.2
Pile N.	3	11	3	1	8	11

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

1	5098.3
2	5395.7
3	6282.1
4	4814.1
5	5120.6
6	5984.7
7	4743.4
8	5050.3
9	5941.0
10	4680.4
11	4987.4
12	5898.5
13	4813.4
14	5110.7
15	6089.4

MINIMUM	4680.4
Pile N.	10
MAXIMUM	6282.1
Pile N.	3

\* EFFECTS FOR LATERALLY LOADED PILE \*







\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL.		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	KN- M**2			
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2	KN- M**2	KN- M**2	KN- M**2			
1	-1.6805E-03	-5.2988E-06	-538.29	-201.62	-384.92	-27.114	-180.60	-8.1758	1533.3	7.8279E+06	7.8279E+06	0.0000			
x(M)	0.0000	9.9000	6.1200	0.0000	0.0000	8.2800	4.1400	10.080	18.000	0.0000	0.0000				
2	-1.6805E-03	-5.2667E-06	-535.74	-198.64	-382.31	-26.708	-178.61	-8.0073	1848.2	7.8279E+06	7.8279E+06	0.0000			
x(M)	0.0000	9.9000	6.1200	0.0000	0.0000	8.2800	4.1400	10.080	18.000	0.0000	0.0000				
3	-1.6805E-03	-5.9250E-06	-661.31	-233.50	-480.74	-36.272	-259.93	-12.550	2078.8	7.8279E+06	7.8279E+06	0.0000			
x(M)	0.0000	9.9000	5.7600	0.0000	0.0000	7.3800	4.1400	9.1800	18.000	0.0000	0.0000				
4	-1.6782E-03	-5.3743E-06	-501.96	-189.15	-351.81	-24.497	-155.22	-6.9303	1472.9	7.8279E+06	7.8279E+06	0.0000			
x(M)	0.0000	10.080	6.3000	0.0000	0.0000	8.4600	4.1400	10.440	18.000	0.0000	0.0000				
5	-1.6782E-03	-5.3338E-06	-500.87	-186.79	-350.61	-24.211	-154.40	-6.8338	1787.8	7.8279E+06	7.8279E+06	0.0000			
x(M)	0.0000	10.080	6.3000	0.0000	0.0000	8.4600	4.1400	10.440	18.000	0.0000	0.0000				
6	-1.6782E-03	-5.1559E-06	-601.58	-219.22	-444.17	-31.487	-231.15	-10.503	2042.3	7.8279E+06	7.8279E+06	0.0000			
x(M)	0.0000	9.3600	5.7600	0.0000	0.0000	7.7400	4.1400	9.5400	18.000	0.0000	0.0000				
7	-1.6758E-03	-5.3760E-06	-500.51	-188.88	-350.57	-24.443	-154.49	-6.9064	1412.6	7.8279E+06	7.8279E+06	0.0000			
x(M)	0.0000	10.080	6.3000	0.0000	0.0000	8.4600	4.1400	10.440	18.000	0.0000	0.0000				
8	-1.6758E-03	-5.3353E-06	-499.49	-186.55	-349.44	-24.162	-153.73	-6.8124	1727.4	7.8279E+06	7.8279E+06	0.0000			
x(M)	0.0000	10.080	6.3000	0.0000	0.0000	8.4600	4.1400	10.440	18.000	0.0000	0.0000				
9	-1.6758E-03	-5.1574E-06	-600.63	-219.19	-443.37	-31.481	-230.76	-10.497	2005.8	7.8279E+06	7.8279E+06	0.0000			
x(M)	0.0000	9.3600	5.7600	0.0000	0.0000	7.7400	4.1400	9.5400	18.000	0.0000	0.0000				
10	-1.6734E-03	-5.3754E-06	-500.27	-189.06	-350.46	-24.478	-154.62	-6.9239	1352.2	7.8279E+06	7.8279E+06	0.0000			
x(M)	0.0000	10.080	6.3000	0.0000	0.0000	8.4600	4.1400	10.440	18.000	0.0000	0.0000				
11	-1.6734E-03	-5.3348E-06	-499.26	-186.73	-349.33	-24.198	-153.86	-6.8298	1667.1	7.8279E+06	7.8279E+06	0.0000			
x(M)	0.0000	10.080	6.3000	0.0000	0.0000	8.4600	4.1400	10.440	18.000	0.0000	0.0000				
12	-1.6734E-03	-5.1588E-06	-599.90	-219.24	-442.76	-31.493	-230.55	-10.498	1969.3	7.8279E+06	7.8279E+06	0.0000			
x(M)	0.0000	9.3600	5.7600	0.0000	0.0000	7.7400	4.1400	9.5400	18.000	0.0000	0.0000				
13	-1.6711E-03	-5.3132E-06	-532.12	-200.52	-379.54	-26.897	-177.29	-8.0622	1291.9	7.8279E+06	7.8279E+06	0.0000			
x(M)	0.0000	9.9000	6.1200	0.0000	0.0000	8.2800	4.1400	10.260	18.000	0.0000	0.0000				
14	-1.6711E-03	-5.2877E-06	-529.53	-197.54	-376.92	-26.483	-175.30	-7.9000	1606.7	7.8279E+06	7.8279E+06	0.0000			
x(M)	0.0000	9.9000	6.1200	0.0000	0.0000	8.2800	4.1400	10.260	18.000	0.0000	0.0000				
15	-1.6711E-03	-5.9361E-06	-656.47	-233.10	-476.40	-36.167	-257.33	-12.479	1921.6	7.8279E+06	7.8279E+06	0.0000			
x(M)	0.0000	9.9000	5.7600	0.0000	0.0000	7.3800	4.1400	9.1800	18.000	0.0000	0.0000				
Min.	-1.6805E-03	-5.9361E-06	-661.31	-233.50	-480.74	-36.272	-259.93	-12.550	1291.9	7.8279E+06	7.8279E+06	0.0000			
Pile N.	1	15	3	3	3	3	3	13	1						

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL.		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	KN- M**2			
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2	KN- M**2	KN- M**2	KN- M**2			
1	3.0108E-05	2.9733E-04	1163.9	94.819	154.16	67.194	46.482	31.688	5098.3	7.8279E+06	7.8279E+06	0.0000			
x(M)	9.9000	0.0000	0.0000	6.1200	8.2800	0.0000	10.080	4.1400	0.0000	0.0000	0.0000				
2	3.0180E-05	2.9497E-04	1158.5	93.580	153.16	66.110	45.935	31.061	5395.7	7.8279E+06	7.8279E+06	0.0000			
x(M)	9.9000	0.0000	0.0000	6.1200	8.2800	0.0000	10.260	4.1400	0.0000	0.0000	0.0000				
3	3.4232E-05	2.9260E-04	1373.0	114.49	209.62	82.444	72.555	44.818	6282.1	7.8279E+06	7.8279E+06	0.0000			
x(M)	9.9000	0.0000	0.0000	5.5800	7.3800	0.0000	9.1800	4.1400	0.0000	0.0000	0.0000				
4	3.0477E-05	2.9733E-04	1090.8	88.546	139.05	61.488	39.350	27.273	4814.1	7.8279E+06	7.8279E+06	0.0000			



<b>APPALTATORE:</b> Consorzio  Soci  	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>												
<b>PROGETTAZIONE:</b> Mandataria  Mandanti  													
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	<table border="1"> <tr> <td>COMMESSA</td> <td>LOTTO</td> <td>CODIFICA</td> <td>DOCUMENTO</td> <td>REV.</td> <td>FOGLIO</td> </tr> <tr> <td>IF28</td> <td>01</td> <td>E ZZ CL</td> <td>VI0403 001</td> <td>B</td> <td>129 di 354</td> </tr> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF28	01	E ZZ CL	VI0403 001	B	129 di 354
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO								
IF28	01	E ZZ CL	VI0403 001	B	129 di 354								

x(M)	10.080	0.0000	0.0000	6.3000	8.4600	0.0000	10.440	4.1400	0.0000	0.0000	0.0000
5	3.0504E-05	2.9497E-04	1088.4	87.611	138.61	60.700	39.147	26.890	5120.6	7.8279E+06	7.8279E+06
x(M)	10.080	0.0000	0.0000	6.3000	8.4600	0.0000	10.620	4.1400	0.0000	0.0000	0.0000
6	2.9750E-05	2.9260E-04	1287.7	104.38	181.72	76.273	60.645	39.910	5984.7	7.8279E+06	7.8279E+06
x(M)	9.3600	0.0000	0.0000	5.7600	7.9200	0.0000	9.5400	4.1400	0.0000	0.0000	0.0000
7	3.0441E-05	2.9733E-04	1087.3	88.422	138.54	61.371	39.158	27.188	4743.4	7.8279E+06	7.8279E+06
x(M)	10.080	0.0000	0.0000	6.3000	8.4600	0.0000	10.620	4.1400	0.0000	0.0000	0.0000
8	3.0467E-05	2.9497E-04	1085.1	87.500	138.13	60.595	38.975	26.814	5050.3	7.8279E+06	7.8279E+06
x(M)	10.080	0.0000	0.0000	6.3000	8.4600	0.0000	10.620	4.1400	0.0000	0.0000	0.0000
9	2.9715E-05	2.9260E-04	1285.3	104.37	181.41	76.258	60.519	39.906	5941.0	7.8279E+06	7.8279E+06
x(M)	9.3600	0.0000	0.0000	5.7600	7.9200	0.0000	9.5400	4.1400	0.0000	0.0000	0.0000
10	3.0392E-05	2.9733E-04	1086.4	88.511	138.53	61.454	39.195	27.254	4680.4	7.8279E+06	7.8279E+06
x(M)	10.080	0.0000	0.0000	6.3000	8.4600	0.0000	10.440	4.1400	0.0000	0.0000	0.0000
11	3.0419E-05	2.9497E-04	1084.2	87.589	138.12	60.678	39.008	26.880	4987.4	7.8279E+06	7.8279E+06
x(M)	10.080	0.0000	0.0000	6.3000	8.4600	0.0000	10.620	4.1400	0.0000	0.0000	0.0000
12	2.9678E-05	2.9260E-04	1283.3	104.40	181.19	76.277	60.438	39.931	5898.5	7.8279E+06	7.8279E+06
x(M)	9.3600	0.0000	0.0000	5.7600	7.9200	0.0000	9.5400	4.1400	0.0000	0.0000	0.0000
13	3.0006E-05	2.9733E-04	1149.5	94.296	152.00	66.687	45.580	31.300	4813.4	7.8279E+06	7.8279E+06
x(M)	9.9000	0.0000	0.0000	6.1200	8.2800	0.0000	10.260	4.1400	0.0000	0.0000	0.0000
14	3.0065E-05	2.9497E-04	1144.1	93.051	150.94	65.605	45.048	30.676	5110.7	7.8279E+06	7.8279E+06
x(M)	9.9000	0.0000	0.0000	6.1200	8.2800	0.0000	10.260	4.1400	0.0000	0.0000	0.0000
15	3.4090E-05	2.9260E-04	1361.1	114.33	207.76	82.231	71.707	44.647	6089.4	7.8279E+06	7.8279E+06
x(M)	9.0000	0.0000	0.0000	5.7600	7.3800	0.0000	9.1800	4.1400	0.0000	0.0000	0.0000
Max.	3.4232E-05	2.9733E-04	1373.0	114.49	209.62	82.444	72.555	44.818	6282.1	7.8279E+06	7.8279E+06
Pile N.	3	1	3	3	3	3	3	1	1		

LOAD CASE : 5  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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	0.6056	1.0000
2	0.5954	1.0000
3	0.8661	1.0000
4	0.5011	1.0000
5	0.4952	1.0000
6	0.7933	1.0000
7	0.4977	1.0000
8	0.4922	1.0000
9	0.7918	1.0000
10	0.4987	1.0000
11	0.4932	1.0000
12	0.7918	1.0000
13	0.5845	1.0000
14	0.5744	1.0000
15	0.8515	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN HOR. LOAD Y, KN HOR. LOAD Z, KN  
28827.0 -3052.82 747.880

MOMENT X, KN- M MOMENT Y, KN- M MOMENT Z, KN- M  
-74.4689 6801.50 -378.093

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*







VERTICAL, M HORIZONTAL Y, M HORIZONTAL Z, M  
1.10053E-03 -7.16612E-04 1.83299E-04

ANGLE ROT. X,RAD ANGLE ROT. Y,RAD ANGLE ROT. Z,RAD  
2.09621E-07 8.49736E-06 2.46296E-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	1.0662E-03	-7.1850E-04	1.8424E-04	2.0962E-07	8.4974E-06	2.4630E-05
2	1.1770E-03	-7.1850E-04	1.8330E-04	2.0962E-07	8.4974E-06	2.4630E-05
3	1.2878E-03	-7.1850E-04	1.8236E-04	2.0962E-07	8.4974E-06	2.4630E-05
4	1.0279E-03	-7.1756E-04	1.8424E-04	2.0962E-07	8.4974E-06	2.4630E-05

<b>APPALTATORE:</b> Consorzio <span style="margin-left: 100px;">Soci</span>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>												
<b>PROGETTAZIONE:</b> Mandataria <span style="margin-left: 100px;">Mandanti</span>   													
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">COMMESSA</td> <td style="width: 15%;">LOTTO</td> <td style="width: 15%;">CODIFICA</td> <td style="width: 15%;">DOCUMENTO</td> <td style="width: 15%;">REV.</td> <td style="width: 15%;">FOGLIO</td> </tr> <tr> <td>IF28</td> <td>01</td> <td>E ZZ CL</td> <td>VI0403 001</td> <td>B</td> <td>130 di 354</td> </tr> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF28	01	E ZZ CL	VI0403 001	B	130 di 354
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO								
IF28	01	E ZZ CL	VI0403 001	B	130 di 354								

5	1.1388E-03	-7.1756E-04	1.8330E-04	2.0962E-07	8.4974E-06	2.4630E-05
6	1.2496E-03	-7.1756E-04	1.8236E-04	2.0962E-07	8.4974E-06	2.4630E-05
7	9.8970E-04	-7.1661E-04	1.8424E-04	2.0962E-07	8.4974E-06	2.4630E-05
8	1.1005E-03	-7.1661E-04	1.8330E-04	2.0962E-07	8.4974E-06	2.4630E-05
9	1.2114E-03	-7.1661E-04	1.8236E-04	2.0962E-07	8.4974E-06	2.4630E-05
10	9.5146E-04	-7.1567E-04	1.8424E-04	2.0962E-07	8.4974E-06	2.4630E-05
11	1.0623E-03	-7.1567E-04	1.8330E-04	2.0962E-07	8.4974E-06	2.4630E-05
12	1.1731E-03	-7.1567E-04	1.8236E-04	2.0962E-07	8.4974E-06	2.4630E-05
13	9.1322E-04	-7.1473E-04	1.8424E-04	2.0962E-07	8.4974E-06	2.4630E-05
14	1.0241E-03	-7.1473E-04	1.8330E-04	2.0962E-07	8.4974E-06	2.4630E-05
15	1.1349E-03	-7.1473E-04	1.8236E-04	2.0962E-07	8.4974E-06	2.4630E-05

MINIMUM	9.1322E-04	-7.1850E-04	1.8236E-04	2.0962E-07	8.4974E-06	2.4630E-05
Pile N.	13	1	3	1	1	1
MAXIMUM	1.2878E-03	-7.1473E-04	1.8424E-04	2.0962E-07	8.4974E-06	2.4630E-05
Pile N.	3	13	1	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP FOR. X, KN FOR. Y, KN FOR. Z, KN MOM X, KN- M MOM Y, KN- M MOM Z, KN- M

1	1862.1	-202.25	49.706	0.069866	-144.64	-601.58
2	2054.7	-200.92	49.077	0.069866	-143.05	-598.92
3	2247.2	-232.37	56.557	0.069866	-157.31	-660.56
4	1795.7	-187.66	46.131	0.069866	-137.34	-571.37
5	1988.2	-186.78	45.637	0.069866	-136.01	-569.60
6	2180.8	-224.29	54.639	0.069866	-153.65	-644.73
7	1729.2	-186.93	46.018	0.069866	-137.10	-569.54
8	1921.8	-186.11	45.537	0.069866	-135.80	-567.87
9	2114.4	-223.84	54.609	0.069866	-153.59	-643.50
10	1662.8	-186.83	46.064	0.069866	-137.20	-569.02
11	1855.4	-186.02	45.583	0.069866	-135.90	-567.36
12	2047.9	-223.55	54.620	0.069866	-153.61	-642.59
13	1596.4	-198.48	49.057	0.069866	-143.32	-592.61
14	1788.9	-197.12	48.423	0.069866	-141.72	-589.89
15	1981.5	-229.67	56.222	0.069866	-156.67	-653.94

MINIMUM	1596.4	-232.37	45.537	0.069866	-157.31	-660.56
Pile N.	13	3	8	1	3	3
MAXIMUM	2247.2	-186.02	56.557	0.069866	-135.80	-567.36
Pile N.	3	11	3	1	8	11

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP DISP. x, M DISP. y, M DISP. z, M ROT. x, RAD ROT. y, RAD ROT. z, RAD

1	1.0662E-03	-7.1850E-04	1.8424E-04	2.0962E-07	8.4974E-06	2.4630E-05
2	1.1770E-03	-7.1850E-04	1.8330E-04	2.0962E-07	8.4974E-06	2.4630E-05
3	1.2878E-03	-7.1850E-04	1.8236E-04	2.0962E-07	8.4974E-06	2.4630E-05
4	1.0279E-03	-7.1756E-04	1.8424E-04	2.0962E-07	8.4974E-06	2.4630E-05
5	1.1388E-03	-7.1756E-04	1.8330E-04	2.0962E-07	8.4974E-06	2.4630E-05
6	1.2496E-03	-7.1756E-04	1.8236E-04	2.0962E-07	8.4974E-06	2.4630E-05
7	9.8970E-04	-7.1661E-04	1.8424E-04	2.0962E-07	8.4974E-06	2.4630E-05
8	1.1005E-03	-7.1661E-04	1.8330E-04	2.0962E-07	8.4974E-06	2.4630E-05
9	1.2114E-03	-7.1661E-04	1.8236E-04	2.0962E-07	8.4974E-06	2.4630E-05
10	9.5146E-04	-7.1567E-04	1.8424E-04	2.0962E-07	8.4974E-06	2.4630E-05
11	1.0623E-03	-7.1567E-04	1.8330E-04	2.0962E-07	8.4974E-06	2.4630E-05
12	1.1731E-03	-7.1567E-04	1.8236E-04	2.0962E-07	8.4974E-06	2.4630E-05
13	9.1322E-04	-7.1473E-04	1.8424E-04	2.0962E-07	8.4974E-06	2.4630E-05
14	1.0241E-03	-7.1473E-04	1.8330E-04	2.0962E-07	8.4974E-06	2.4630E-05
15	1.1349E-03	-7.1473E-04	1.8236E-04	2.0962E-07	8.4974E-06	2.4630E-05

MINIMUM	9.1322E-04	-7.1850E-04	1.8236E-04	2.0962E-07	8.4974E-06	2.4630E-05
Pile N.	13	1	3	1	1	1
MAXIMUM	1.2878E-03	-7.1473E-04	1.8424E-04	2.0962E-07	8.4974E-06	2.4630E-05
Pile N.	3	13	1	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP AXIAL, KN LAT. y, KN LAT. z, KN MOM x, KN- M MOM y, KN- M MOM z, KN- M

1	1862.1	-202.25	49.706	0.069866	-144.64	-601.58
2	2054.7	-200.92	49.077	0.069866	-143.05	-598.92
3	2247.2	-232.37	56.557	0.069866	-157.31	-660.56
4	1795.7	-187.66	46.131	0.069866	-137.34	-571.37
5	1988.2	-186.78	45.637	0.069866	-136.01	-569.60
6	2180.8	-224.29	54.639	0.069866	-153.65	-644.73
7	1729.2	-186.93	46.018	0.069866	-137.10	-569.54
8	1921.8	-186.11	45.537	0.069866	-135.80	-567.87
9	2114.4	-223.84	54.609	0.069866	-153.59	-643.50
10	1662.8	-186.83	46.064	0.069866	-137.20	-569.02
11	1855.4	-186.02	45.583	0.069866	-135.90	-567.36
12	2047.9	-223.55	54.620	0.069866	-153.61	-642.59
13	1596.4	-198.48	49.057	0.069866	-143.32	-592.61
14	1788.9	-197.12	48.423	0.069866	-141.72	-589.89
15	1981.5	-229.67	56.222	0.069866	-156.67	-653.94

APPALTATORE: Consorzio <b>HirpiniaAV</b> Soci <b>salini impregilo</b> <b>ASTALDI</b>		<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>			
PROGETTAZIONE: Mandataria <b>ROKSOJL</b> Mandanti <b>NETENGINEERING</b> <b>Alpina</b>					
PROGETTO ESECUTIVO <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>					
COMMESSA <b>IF28</b>	LOTTO <b>01</b>	CODIFICA <b>E ZZ CL</b>	DOCUMENTO <b>VI0403 001</b>	REV. <b>B</b>	FOGLIO <b>131 di 354</b>

MINIMUM	1596.4	-232.37	45.537	0.069866	-157.31	-660.56
Pile N.	13	3	8	1	3	3
MAXIMUM	2247.2	-186.02	56.557	0.069866	-135.80	-567.36
Pile N.	3	11	3	1	8	11

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

1	2921.1
2	3021.1
3	3321.0
4	2789.7
5	2892.5
6	3234.4
7	2746.5
8	2849.7
9	3193.2
10	2707.5
11	2810.7
12	3152.9
13	2743.5
14	2843.3
15	3150.8

MINIMUM	2707.5
Pile N.	10
MAXIMUM	3321.0
Pile N.	3

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL.		MOMENT		SHEAR		SOIL REACT		TOTAL		FLEX. RIG.	FLEX. RIG.
	y-DIR	z-DIR	y-DIR	z-DIR	y-DIR	z-DIR	z-DIR	z-DIR	STRESS	z-DIR		
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2	KN- M**2	KN- M**2	
1	-7.1850E-04	-4.0738E-06	-286.13	-144.64	-202.27	-22.185	-119.75	-7.3380	1053.7	7.8279E+06	7.8279E+06	
x(M)	0.0000	9.0000	5.7600	0.0000	0.0000	7.3800	4.1400	9.0000	18.000	0.0000	0.0000	
2	-7.1850E-04	-4.0669E-06	-284.86	-143.05	-200.93	-21.870	-118.24	-7.2028	1162.7	7.8279E+06	7.8279E+06	
x(M)	0.0000	9.1800	5.7600	0.0000	0.0000	7.3800	4.1400	9.0000	18.000	0.0000	0.0000	
3	-7.1850E-04	-3.6582E-06	-317.11	-157.31	-232.39	-26.210	-156.34	-9.1467	1271.7	7.8279E+06	7.8279E+06	
x(M)	0.0000	8.6400	5.4000	0.0000	0.0000	7.2000	4.1400	9.0000	18.000	0.0000	0.0000	
4	-7.1756E-04	-4.2685E-06	-271.03	-137.34	-187.67	-20.172	-103.57	-6.2320	1016.1	7.8279E+06	7.8279E+06	
x(M)	0.0000	9.3600	5.7600	0.0000	0.0000	7.5600	4.1400	9.0000	18.000	0.0000	0.0000	
5	-7.1756E-04	-4.2588E-06	-270.11	-136.01	-186.80	-19.940	-102.65	-6.1309	1125.1	7.8279E+06	7.8279E+06	
x(M)	0.0000	9.3600	5.7600	0.0000	0.0000	7.5600	4.1400	9.0000	18.000	0.0000	0.0000	
6	-7.1756E-04	-3.7470E-06	-308.60	-153.65	-224.31	-25.123	-146.43	-8.7262	1234.1	7.8279E+06	7.8279E+06	
x(M)	0.0000	8.8200	5.4000	0.0000	0.0000	7.2000	4.1400	9.0000	18.000	0.0000	0.0000	
7	-7.1661E-04	-4.2760E-06	-270.16	-137.10	-186.94	-20.104	-102.95	-6.1966	978.55	7.8279E+06	7.8279E+06	
x(M)	0.0000	9.3600	5.7600	0.0000	0.0000	7.5600	4.1400	9.0000	18.000	0.0000	0.0000	
8	-7.1661E-04	-4.2652E-06	-269.30	-135.80	-186.12	-19.880	-102.08	-6.0997	1087.5	7.8279E+06	7.8279E+06	
x(M)	0.0000	9.3600	5.7600	0.0000	0.0000	7.5600	4.1400	9.0000	18.000	0.0000	0.0000	
9	-7.1661E-04	-3.7490E-06	-308.06	-153.59	-223.86	-25.105	-146.09	-8.7213	1196.5	7.8279E+06	7.8279E+06	
x(M)	0.0000	8.8200	5.4000	0.0000	0.0000	7.2000	4.1400	9.0000	18.000	0.0000	0.0000	
10	-7.1567E-04	-4.2737E-06	-269.99	-137.20	-186.84	-20.129	-103.01	-6.2127	940.96	7.8279E+06	7.8279E+06	
x(M)	0.0000	9.3600	5.7600	0.0000	0.0000	7.5600	4.1400	9.0000	18.000	0.0000	0.0000	
11	-7.1567E-04	-4.2630E-06	-269.13	-135.90	-186.03	-19.905	-102.15	-6.1160	1049.9	7.8279E+06	7.8279E+06	
x(M)	0.0000	9.3600	5.7600	0.0000	0.0000	7.5600	4.1400	9.0000	18.000	0.0000	0.0000	
12	-7.1567E-04	-3.7487E-06	-307.69	-153.61	-223.57	-25.111	-145.96	-8.7260	1158.9	7.8279E+06	7.8279E+06	
x(M)	0.0000	8.8200	5.4000	0.0000	0.0000	7.2000	4.1400	9.0000	18.000	0.0000	0.0000	
13	-7.1473E-04	-4.1105E-06	-282.04	-143.32	-198.49	-21.797	-116.17	-7.1517	903.37	7.8279E+06	7.8279E+06	
x(M)	0.0000	9.1800	5.7600	0.0000	0.0000	7.5600	4.1400	9.0000	18.000	0.0000	0.0000	
14	-7.1473E-04	-4.1089E-06	-280.71	-141.72	-197.13	-21.502	-114.65	-7.0129	1012.3	7.8279E+06	7.8279E+06	
x(M)	0.0000	9.1800	5.7600	0.0000	0.0000	7.5600	4.1400	9.0000	18.000	0.0000	0.0000	
15	-7.1473E-04	-3.6746E-06	-314.04	-156.67	-229.68	-26.025	-153.85	-9.0855	1121.3	7.8279E+06	7.8279E+06	
x(M)	0.0000	8.6400	5.4000	0.0000	0.0000	7.2000	4.1400	9.0000	18.000	0.0000	0.0000	
Min.	-7.1850E-04	-4.2760E-06	-317.11	-157.31	-232.39	-26.210	-156.34	-9.1467	903.37	7.8279E+06	7.8279E+06	
Pile N.	1	7	3	3	3	3	3	13	1	1		

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL.		MOMENT		SHEAR		SOIL REACT		TOTAL		FLEX. RIG.	FLEX. RIG.
	y-DIR	z-DIR	y-DIR	z-DIR	y-DIR	z-DIR	z-DIR	z-DIR	STRESS	z-DIR		
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2	KN- M**2	KN- M**2	
1	1.6140E-05	1.8424E-04	601.58	72.359	87.837	49.710	29.064	29.899	2921.1	7.8279E+06	7.8279E+06	
x(M)	9.1800	0.0000	0.0000	5.5800	7.3800	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000	
2	1.6222E-05	1.8330E-04	598.92	71.613	87.154	49.080	28.677	29.355	3021.1	7.8279E+06	7.8279E+06	
x(M)	9.1800	0.0000	0.0000	5.5800	7.5600	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000	
3	1.4661E-05	1.8236E-04	660.56	79.316	105.04	56.561	36.780	38.615	3321.0	7.8279E+06	7.8279E+06	
x(M)	8.6400	0.0000	0.0000	5.4000	7.2000	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000	
4	1.6901E-05	1.8424E-04	571.37	68.587	79.775	46.134	24.573	25.889	2789.7	7.8279E+06	7.8279E+06	
x(M)	9.3600	0.0000	0.0000	5.7600	7.5600	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000	
5	1.6952E-05	1.8330E-04	569.60	67.989	79.278	45.640	24.299	25.512	2892.5	7.8279E+06	7.8279E+06	
x(M)	9.3600	0.0000	0.0000	5.7600	7.5600	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000	
6	1.5009E-05	1.8236E-04	644.73	77.333	100.47	54.643	35.010	36.212	3234.4	7.8279E+06	7.8279E+06	
x(M)	8.8200	0.0000	0.0000	5.4000	7.2000	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000	
7	1.6906E-05	1.8424E-04	569.54	68.465	79.391	46.021	24.397	25.769	2746.5	7.8279E+06	7.8279E+06	

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	COMMESSA <b>IF28</b> LOTTO <b>01</b> CODIFICA <b>E ZZ CL</b> DOCUMENTO <b>VI0403 001</b> REV. <b>B</b> FOGLIO <b>132 di 354</b>

x (M)	9.3600	0.0000	0.0000	5.7600	7.5600	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
8	1.6953E-05	1.8330E-04	567.87	67.881	78.924	45.540	24.140	25.407	2849.7	7.8279E+06	7.8279E+06
x (M)	9.3600	0.0000	0.0000	5.7600	7.5600	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
9	1.4996E-05	1.8236E-04	643.50	77.303	100.26	54.613	34.942	36.180	3193.2	7.8279E+06	7.8279E+06
x (M)	8.8200	0.0000	0.0000	5.4000	7.2000	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
10	1.6874E-05	1.8424E-04	569.02	68.514	79.383	46.066	24.428	25.822	2707.5	7.8279E+06	7.8279E+06
x (M)	9.3600	0.0000	0.0000	5.7600	7.5600	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
11	1.6922E-05	1.8330E-04	567.36	67.931	78.919	45.586	24.172	25.460	2810.7	7.8279E+06	7.8279E+06
x (M)	9.3600	0.0000	0.0000	5.7600	7.5600	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
12	1.4974E-05	1.8236E-04	642.59	77.317	100.15	54.623	34.913	36.199	3152.9	7.8279E+06	7.8279E+06
x (M)	8.8200	0.0000	0.0000	5.4000	7.2000	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
13	1.6213E-05	1.8424E-04	592.61	71.648	85.971	49.060	28.157	29.169	2743.5	7.8279E+06	7.8279E+06
x (M)	9.1800	0.0000	0.0000	5.5800	7.5600	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
14	1.6292E-05	1.8330E-04	589.89	70.889	85.259	48.426	27.754	28.623	2843.3	7.8279E+06	7.8279E+06
x (M)	9.1800	0.0000	0.0000	5.5800	7.5600	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
15	1.4643E-05	1.8236E-04	653.94	78.987	103.71	56.225	36.326	38.214	3150.8	7.8279E+06	7.8279E+06
x (M)	8.6400	0.0000	0.0000	5.4000	7.2000	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
Max.	1.6953E-05	1.8424E-04	660.56	79.316	105.04	56.561	36.780	38.615	3321.0	7.8279E+06	7.8279E+06
Pile N.	8	1	3	3	3	3	3	1	1		

LOAD CASE : 6  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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	0.5949	1.0000
2	0.5871	1.0000
3	0.8661	1.0000
4	0.4982	1.0000
5	0.4951	1.0000
6	0.7994	1.0000
7	0.4960	1.0000
8	0.4931	1.0000
9	0.7987	1.0000
10	0.4971	1.0000
11	0.4942	1.0000
12	0.7987	1.0000
13	0.5845	1.0000
14	0.5768	1.0000
15	0.8590	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN    HOR. LOAD Y, KN    HOR. LOAD Z, KN  
45447.6    -5912.75    1025.26

MOMENT X, KN- M    MOMENT Y, KN- M    MOMENT Z, KN- M  
-182.035    9631.34    5770.31

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*



VERTICAL, M    HORIZONTAL Y, M    HORIZONTAL Z, M  
1.75144E-03    -1.67580E-03    2.94966E-04

ANGLE ROT. X,RAD    ANGLE ROT. Y,RAD    ANGLE ROT. Z,RAD  
5.26233E-07    1.36430E-05    7.11704E-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	1.5540E-03	-1.6805E-03	2.9733E-04	5.2623E-07	1.3643E-05	7.1170E-05
2	1.8742E-03	-1.6805E-03	2.9497E-04	5.2623E-07	1.3643E-05	7.1170E-05
3	2.1945E-03	-1.6805E-03	2.9260E-04	5.2623E-07	1.3643E-05	7.1170E-05
4	1.4926E-03	-1.6782E-03	2.9733E-04	5.2623E-07	1.3643E-05	7.1170E-05
5	1.8128E-03	-1.6782E-03	2.9497E-04	5.2623E-07	1.3643E-05	7.1170E-05
6	2.1331E-03	-1.6782E-03	2.9260E-04	5.2623E-07	1.3643E-05	7.1170E-05
7	1.4312E-03	-1.6758E-03	2.9733E-04	5.2623E-07	1.3643E-05	7.1170E-05
8	1.7514E-03	-1.6758E-03	2.9497E-04	5.2623E-07	1.3643E-05	7.1170E-05
9	2.0717E-03	-1.6758E-03	2.9260E-04	5.2623E-07	1.3643E-05	7.1170E-05
10	1.3698E-03	-1.6734E-03	2.9733E-04	5.2623E-07	1.3643E-05	7.1170E-05

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>				
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>					
<b>COMMESSA</b> <b>IF28</b>	<b>LOTTO</b> <b>01</b>	<b>CODIFICA</b> <b>E ZZ CL</b>	<b>DOCUMENTO</b> <b>VI0403 001</b>	<b>REV.</b> <b>B</b>	<b>FOGLIO</b> <b>133 di 354</b>

11	1.6900E-03	-1.6734E-03	2.9497E-04	5.2623E-07	1.3643E-05	7.1170E-05
12	2.0103E-03	-1.6734E-03	2.9260E-04	5.2623E-07	1.3643E-05	7.1170E-05
13	1.3084E-03	-1.6711E-03	2.9733E-04	5.2623E-07	1.3643E-05	7.1170E-05
14	1.6286E-03	-1.6711E-03	2.9497E-04	5.2623E-07	1.3643E-05	7.1170E-05
15	1.9489E-03	-1.6711E-03	2.9260E-04	5.2623E-07	1.3643E-05	7.1170E-05

MINIMUM	1.3084E-03	-1.6805E-03	2.9260E-04	5.2623E-07	1.3643E-05	7.1170E-05
Pile N.	13	1	3	1	1	1
MAXIMUM	2.1945E-03	-1.6711E-03	2.9733E-04	5.2623E-07	1.3643E-05	7.1170E-05
Pile N.	3	13	1	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP FOR. X, KN FOR. Y, KN FOR. Z, KN MOM X, KN- M MOM Y, KN- M MOM Z, KN- M

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
1	2709.6	-384.89	67.187	0.1754	-201.62	-1163.9
2	3266.0	-382.27	66.103	0.1754	-198.64	-1158.5
3	3673.6	-480.68	82.434	0.1754	-233.50	-1373.0
4	2602.9	-351.78	61.482	0.1754	-189.15	-1090.8
5	3159.3	-350.57	60.693	0.1754	-186.79	-1088.4
6	3609.1	-444.12	76.263	0.1754	-219.22	-1287.7
7	2496.2	-350.54	61.365	0.1754	-188.88	-1087.3
8	3052.7	-349.40	60.589	0.1754	-186.55	-1085.1
9	3544.6	-443.32	76.249	0.1754	-219.19	-1285.3
10	2389.6	-350.43	61.449	0.1754	-189.06	-1086.4
11	2946.0	-349.30	60.671	0.1754	-186.73	-1084.2
12	3480.1	-442.71	76.269	0.1754	-219.24	-1283.3
13	2282.9	-379.51	66.682	0.1754	-200.52	-1149.5
14	2839.3	-376.89	65.598	0.1754	-197.54	-1144.1
15	3395.7	-476.35	82.222	0.1754	-233.10	-1361.1

MINIMUM	2282.9	-480.68	60.589	0.1754	-233.50	-1373.0
Pile N.	13	3	8	1	3	3
MAXIMUM	3673.6	-349.30	82.434	0.1754	-186.55	-1084.2
Pile N.	3	11	3	1	8	11

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP DISP. x, M DISP. y, M DISP. z, M ROT. x,RAD ROT. y,RAD ROT. z,RAD

1	1.5540E-03	-1.6805E-03	2.9733E-04	5.2623E-07	1.3643E-05	7.1170E-05
2	1.8742E-03	-1.6805E-03	2.9497E-04	5.2623E-07	1.3643E-05	7.1170E-05
3	2.1945E-03	-1.6805E-03	2.9260E-04	5.2623E-07	1.3643E-05	7.1170E-05
4	1.4926E-03	-1.6782E-03	2.9733E-04	5.2623E-07	1.3643E-05	7.1170E-05
5	1.8128E-03	-1.6782E-03	2.9497E-04	5.2623E-07	1.3643E-05	7.1170E-05
6	2.1331E-03	-1.6782E-03	2.9260E-04	5.2623E-07	1.3643E-05	7.1170E-05
7	1.4312E-03	-1.6758E-03	2.9733E-04	5.2623E-07	1.3643E-05	7.1170E-05
8	1.7514E-03	-1.6758E-03	2.9497E-04	5.2623E-07	1.3643E-05	7.1170E-05
9	2.0717E-03	-1.6758E-03	2.9260E-04	5.2623E-07	1.3643E-05	7.1170E-05
10	1.3698E-03	-1.6734E-03	2.9733E-04	5.2623E-07	1.3643E-05	7.1170E-05
11	1.6900E-03	-1.6734E-03	2.9497E-04	5.2623E-07	1.3643E-05	7.1170E-05
12	2.0103E-03	-1.6734E-03	2.9260E-04	5.2623E-07	1.3643E-05	7.1170E-05
13	1.3084E-03	-1.6711E-03	2.9733E-04	5.2623E-07	1.3643E-05	7.1170E-05
14	1.6286E-03	-1.6711E-03	2.9497E-04	5.2623E-07	1.3643E-05	7.1170E-05
15	1.9489E-03	-1.6711E-03	2.9260E-04	5.2623E-07	1.3643E-05	7.1170E-05

MINIMUM	1.3084E-03	-1.6805E-03	2.9260E-04	5.2623E-07	1.3643E-05	7.1170E-05
Pile N.	13	1	3	1	1	1
MAXIMUM	2.1945E-03	-1.6711E-03	2.9733E-04	5.2623E-07	1.3643E-05	7.1170E-05
Pile N.	3	13	1	1	1	1







\* PILE TOP REACTIONS \*

PILE GROUP AXIAL, KN LAT. y, KN LAT. z, KN MOM x, KN- M MOM y, KN- M MOM z, KN- M

1	2709.6	-384.89	67.187	0.1754	-201.62	-1163.9
2	3266.0	-382.27	66.103	0.1754	-198.64	-1158.5
3	3673.6	-480.68	82.434	0.1754	-233.50	-1373.0
4	2602.9	-351.78	61.482	0.1754	-189.15	-1090.8
5	3159.3	-350.57	60.693	0.1754	-186.79	-1088.4
6	3609.1	-444.12	76.263	0.1754	-219.22	-1287.7
7	2496.2	-350.54	61.365	0.1754	-188.88	-1087.3
8	3052.7	-349.40	60.589	0.1754	-186.55	-1085.1
9	3544.6	-443.32	76.249	0.1754	-219.19	-1285.3
10	2389.6	-350.43	61.449	0.1754	-189.06	-1086.4
11	2946.0	-349.30	60.671	0.1754	-186.73	-1084.2
12	3480.1	-442.71	76.269	0.1754	-219.24	-1283.3
13	2282.9	-379.51	66.682	0.1754	-200.52	-1149.5
14	2839.3	-376.89	65.598	0.1754	-197.54	-1144.1
15	3395.7	-476.35	82.222	0.1754	-233.10	-1361.1

MINIMUM	2282.9	-480.68	60.589	0.1754	-233.50	-1373.0
Pile N.	13	3	8	1	3	3
MAXIMUM	3673.6	-349.30	82.434	0.1754	-186.55	-1084.2
Pile N.	3	11	3	1	8	11



<b>APPALTATORE:</b> Consorzio <span style="margin-left: 100px;">Soci</span>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>												
<b>PROGETTAZIONE:</b> Mandataria <span style="margin-left: 100px;">Mandanti</span>   													
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">COMMESSA</td> <td style="width: 10%;">LOTTO</td> <td style="width: 15%;">CODIFICA</td> <td style="width: 15%;">DOCUMENTO</td> <td style="width: 10%;">REV.</td> <td style="width: 10%;">FOGLIO</td> </tr> <tr> <td>IF28</td> <td>01</td> <td>E ZZ CL</td> <td>VI0403 001</td> <td>B</td> <td>135 di 354</td> </tr> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF28	01	E ZZ CL	VI0403 001	B	135 di 354
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO								
IF28	01	E ZZ CL	VI0403 001	B	135 di 354								

x(M)	10.080	0.0000	0.0000	6.3000	8.4600	0.0000	10.440	4.1400	0.0000	0.0000	0.0000
11	3.0419E-05	2.9497E-04	1084.2	87.589	138.12	60.678	39.008	26.880	4987.4	7.8279E+06	7.8279E+06
x(M)	10.080	0.0000	0.0000	6.3000	8.4600	0.0000	10.620	4.1400	0.0000	0.0000	0.0000
12	2.9678E-05	2.9260E-04	1283.3	104.40	181.19	76.277	60.438	39.931	5898.5	7.8279E+06	7.8279E+06
x(M)	9.3600	0.0000	0.0000	5.7600	7.9200	0.0000	9.5400	4.1400	0.0000	0.0000	0.0000
13	3.0006E-05	2.9733E-04	1149.5	94.296	152.00	66.687	45.580	31.300	4813.4	7.8279E+06	7.8279E+06
x(M)	9.9000	0.0000	0.0000	6.1200	8.2800	0.0000	10.260	4.1400	0.0000	0.0000	0.0000
14	3.0065E-05	2.9497E-04	1144.1	93.051	150.94	65.605	45.048	30.676	5110.7	7.8279E+06	7.8279E+06
x(M)	9.9000	0.0000	0.0000	6.1200	8.2800	0.0000	10.260	4.1400	0.0000	0.0000	0.0000
15	3.4090E-05	2.9260E-04	1361.1	114.33	207.76	82.231	71.706	44.647	6089.4	7.8279E+06	7.8279E+06
x(M)	9.0000	0.0000	0.0000	5.7600	7.3800	0.0000	9.1800	4.1400	0.0000	0.0000	0.0000
Max.	3.4232E-05	2.9733E-04	1373.0	114.49	209.61	82.444	72.555	44.818	6282.1	7.8279E+06	7.8279E+06
Pile N.	3	1	3	3	3	3	3	1	1		

LOAD CASE : 7  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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	0.6771	1.0000
2	0.6518	1.0000
3	0.8661	1.0000
4	0.5208	1.0000
5	0.4954	1.0000
6	0.7476	1.0000
7	0.5093	1.0000
8	0.4852	1.0000
9	0.7402	1.0000
10	0.5100	1.0000
11	0.4860	1.0000
12	0.7402	1.0000
13	0.5845	1.0000
14	0.5567	1.0000
15	0.7958	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
35398.3	-1957.07	1025.26
MOMENT X, KN-M	MOMENT Y, KN-M	MOMENT Z, KN-M
-162.620	9631.34	-7161.46







\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
1.35269E-03	-3.80966E-04	2.41027E-04
ANGLE ROT. X,RAD	ANGLE ROT. Y,RAD	ANGLE ROT. Z,RAD
-5.31086E-07	1.18954E-05	-3.03132E-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	1.4734E-03	-3.7619E-04	2.3864E-04	-5.3109E-07	1.1895E-05	-3.0313E-06
2	1.4597E-03	-3.7619E-04	2.4103E-04	-5.3109E-07	1.1895E-05	-3.0313E-06
3	1.4461E-03	-3.7619E-04	2.4342E-04	-5.3109E-07	1.1895E-05	-3.0313E-06
4	1.4199E-03	-3.7858E-04	2.3864E-04	-5.3109E-07	1.1895E-05	-3.0313E-06
5	1.4062E-03	-3.7858E-04	2.4103E-04	-5.3109E-07	1.1895E-05	-3.0313E-06
6	1.3926E-03	-3.7858E-04	2.4342E-04	-5.3109E-07	1.1895E-05	-3.0313E-06
7	1.3663E-03	-3.8097E-04	2.3864E-04	-5.3109E-07	1.1895E-05	-3.0313E-06
8	1.3527E-03	-3.8097E-04	2.4103E-04	-5.3109E-07	1.1895E-05	-3.0313E-06
9	1.3391E-03	-3.8097E-04	2.4342E-04	-5.3109E-07	1.1895E-05	-3.0313E-06
10	1.3128E-03	-3.8336E-04	2.3864E-04	-5.3109E-07	1.1895E-05	-3.0313E-06
11	1.2992E-03	-3.8336E-04	2.4103E-04	-5.3109E-07	1.1895E-05	-3.0313E-06
12	1.2855E-03	-3.8336E-04	2.4342E-04	-5.3109E-07	1.1895E-05	-3.0313E-06
13	1.2593E-03	-3.8575E-04	2.3864E-04	-5.3109E-07	1.1895E-05	-3.0313E-06
14	1.2456E-03	-3.8575E-04	2.4103E-04	-5.3109E-07	1.1895E-05	-3.0313E-06
15	1.2320E-03	-3.8575E-04	2.4342E-04	-5.3109E-07	1.1895E-05	-3.0313E-06

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>				
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>					
<b>COMMESSA</b> <b>IF28</b>	<b>LOTTO</b> <b>01</b>	<b>CODIFICA</b> <b>E ZZ CL</b>	<b>DOCUMENTO</b> <b>VI0403 001</b>	<b>REV.</b> <b>B</b>	<b>FOGLIO</b> <b>136 di 354</b>

MINIMUM	1.2320E-03	-3.8575E-04	2.3864E-04	-5.3109E-07	1.1895E-05	-3.0313E-06
Pile N.	15	13	1	1	1	1
MAXIMUM	1.4734E-03	-3.7619E-04	2.4342E-04	-5.3109E-07	1.1895E-05	-3.0313E-06
Pile N.	1	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

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
1	2569.6	-133.50	70.096	-0.1770	-197.67	-411.03
2	2545.9	-131.64	69.867	-0.1770	-198.11	-407.31
3	2522.2	-145.79	78.841	-0.1770	-216.31	-434.90
4	2476.6	-122.10	63.280	-0.1770	-184.01	-388.74
5	2452.9	-119.87	62.779	-0.1770	-183.80	-384.09
6	2429.2	-139.06	74.463	-0.1770	-207.95	-422.81
7	2383.6	-121.80	62.697	-0.1770	-182.80	-388.89
8	2359.9	-119.64	62.240	-0.1770	-182.67	-384.38
9	2336.2	-139.34	74.136	-0.1770	-207.29	-424.23
10	2290.6	-122.54	62.696	-0.1770	-182.78	-391.21
11	2266.9	-120.38	62.243	-0.1770	-182.66	-386.69
12	2243.2	-140.13	74.098	-0.1770	-207.20	-426.64
13	2197.6	-129.47	66.075	-0.1770	-189.62	-406.24
14	2173.9	-127.16	65.585	-0.1770	-189.48	-401.53
15	2150.2	-144.64	76.160	-0.1770	-211.14	-436.30

MINIMUM	2150.2	-145.79	62.240	-0.1770	-216.31	-436.30
Pile N.	15	3	8	1	3	15
MAXIMUM	2569.6	-119.64	78.841	-0.1770	-182.66	-384.09
Pile N.	1	8	3	1	11	5

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP DISP. x, M DISP. y, M DISP. z, M ROT. x, RAD ROT. y, RAD ROT. z, RAD

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x, RAD	ROT. y, RAD	ROT. z, RAD
1	1.4734E-03	-3.7619E-04	2.3864E-04	-5.3109E-07	1.1895E-05	-3.0313E-06
2	1.4597E-03	-3.7619E-04	2.4103E-04	-5.3109E-07	1.1895E-05	-3.0313E-06
3	1.4461E-03	-3.7619E-04	2.4342E-04	-5.3109E-07	1.1895E-05	-3.0313E-06
4	1.4199E-03	-3.7858E-04	2.3864E-04	-5.3109E-07	1.1895E-05	-3.0313E-06
5	1.4062E-03	-3.7858E-04	2.4103E-04	-5.3109E-07	1.1895E-05	-3.0313E-06
6	1.3926E-03	-3.7858E-04	2.4342E-04	-5.3109E-07	1.1895E-05	-3.0313E-06
7	1.3663E-03	-3.8097E-04	2.3864E-04	-5.3109E-07	1.1895E-05	-3.0313E-06
8	1.3527E-03	-3.8097E-04	2.4103E-04	-5.3109E-07	1.1895E-05	-3.0313E-06
9	1.3391E-03	-3.8097E-04	2.4342E-04	-5.3109E-07	1.1895E-05	-3.0313E-06
10	1.3128E-03	-3.8336E-04	2.3864E-04	-5.3109E-07	1.1895E-05	-3.0313E-06
11	1.2992E-03	-3.8336E-04	2.4103E-04	-5.3109E-07	1.1895E-05	-3.0313E-06
12	1.2855E-03	-3.8336E-04	2.4342E-04	-5.3109E-07	1.1895E-05	-3.0313E-06
13	1.2593E-03	-3.8575E-04	2.3864E-04	-5.3109E-07	1.1895E-05	-3.0313E-06
14	1.2456E-03	-3.8575E-04	2.4103E-04	-5.3109E-07	1.1895E-05	-3.0313E-06
15	1.2320E-03	-3.8575E-04	2.4342E-04	-5.3109E-07	1.1895E-05	-3.0313E-06

MINIMUM	1.2320E-03	-3.8575E-04	2.3864E-04	-5.3109E-07	1.1895E-05	-3.0313E-06
Pile N.	15	13	1	1	1	1
MAXIMUM	1.4734E-03	-3.7619E-04	2.4342E-04	-5.3109E-07	1.1895E-05	-3.0313E-06
Pile N.	1	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

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	2569.6	-133.50	70.096	-0.1770	-197.67	-411.03
2	2545.9	-131.64	69.867	-0.1770	-198.11	-407.31
3	2522.2	-145.79	78.841	-0.1770	-216.31	-434.90
4	2476.6	-122.10	63.280	-0.1770	-184.01	-388.74
5	2452.9	-119.87	62.779	-0.1770	-183.80	-384.09
6	2429.2	-139.06	74.463	-0.1770	-207.95	-422.81
7	2383.6	-121.80	62.697	-0.1770	-182.80	-388.89
8	2359.9	-119.64	62.240	-0.1770	-182.67	-384.38
9	2336.2	-139.34	74.136	-0.1770	-207.29	-424.23
10	2290.6	-122.54	62.696	-0.1770	-182.78	-391.21
11	2266.9	-120.38	62.243	-0.1770	-182.66	-386.69
12	2243.2	-140.13	74.098	-0.1770	-207.20	-426.64
13	2197.6	-129.47	66.075	-0.1770	-189.62	-406.24
14	2173.9	-127.16	65.585	-0.1770	-189.48	-401.53
15	2150.2	-144.64	76.160	-0.1770	-211.14	-436.30







MINIMUM	2150.2	-145.79	62.240	-0.1770	-216.31	-436.30
Pile N.	15	3	8	1	3	15
MAXIMUM	2569.6	-119.64	78.841	-0.1770	-182.66	-384.09
Pile N.	1	8	3	1	11	5

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

1	2830.6
2	2807.7
3	2893.2
4	2699.5





<b>APPALTATORE:</b> Consorzio  Soci  	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>												
<b>PROGETTAZIONE:</b> Mandataria  Mandanti  													
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	<table border="1"> <tr> <td>COMMESSA</td> <td>LOTTO</td> <td>CODIFICA</td> <td>DOCUMENTO</td> <td>REV.</td> <td>FOGLIO</td> </tr> <tr> <td>IF28</td> <td>01</td> <td>E ZZ CL</td> <td>VI0403 001</td> <td>B</td> <td>138 di 354</td> </tr> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF28	01	E ZZ CL	VI0403 001	B	138 di 354
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO								
IF28	01	E ZZ CL	VI0403 001	B	138 di 354								

x(M)	9.0000	0.0000	0.0000	5.5800	7.3800	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
14	9.4622E-06	2.4103E-04	401.53	96.978	50.894	65.590	18.248	43.303	2570.2	7.8279E+06	7.8279E+06
x(M)	9.1800	0.0000	0.0000	5.5800	7.3800	0.0000	9.0000	4.1400	0.0000	0.0000	0.0000
15	8.5753E-06	2.4342E-04	436.30	108.76	61.135	76.165	23.185	56.945	2679.6	7.8279E+06	7.8279E+06
x(M)	8.6400	0.0000	0.0000	5.4000	7.2000	0.0000	8.8200	4.1400	0.0000	0.0000	0.0000
Max.	9.7434E-06	2.4342E-04	436.30	111.84	62.357	78.848	23.843	60.975	2893.2	7.8279E+06	7.8279E+06
Pile N.	11	3	15	3	3	3	3	3	1	1	

LOAD CASE : 8  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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	0.5883	1.0000
2	0.5820	1.0000
3	0.8661	1.0000
4	0.4965	1.0000
5	0.4951	1.0000
6	0.8032	1.0000
7	0.4950	1.0000
8	0.4937	1.0000
9	0.8029	1.0000
10	0.4961	1.0000
11	0.4948	1.0000
12	0.8029	1.0000
13	0.5845	1.0000
14	0.5783	1.0000
15	0.8635	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
42484.7	-5912.75	641.876
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-137.878	3424.46	6472.16

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
1.62470E-03	-1.66565E-03	1.73346E-04
ANGLE ROT. X,RAD	ANGLE ROT. Y,RAD	ANGLE ROT. Z,RAD
3.06627E-07	5.13340E-06	6.89090E-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	1.3608E-03	-1.6684E-03	1.7473E-04	3.0663E-07	5.1334E-06	6.8909E-05
2	1.6709E-03	-1.6684E-03	1.7335E-04	3.0663E-07	5.1334E-06	6.8909E-05
3	1.9810E-03	-1.6684E-03	1.7197E-04	3.0663E-07	5.1334E-06	6.8909E-05
4	1.3377E-03	-1.6670E-03	1.7473E-04	3.0663E-07	5.1334E-06	6.8909E-05
5	1.6478E-03	-1.6670E-03	1.7335E-04	3.0663E-07	5.1334E-06	6.8909E-05
6	1.9579E-03	-1.6670E-03	1.7197E-04	3.0663E-07	5.1334E-06	6.8909E-05
7	1.3146E-03	-1.6657E-03	1.7473E-04	3.0663E-07	5.1334E-06	6.8909E-05
8	1.6247E-03	-1.6657E-03	1.7335E-04	3.0663E-07	5.1334E-06	6.8909E-05
9	1.9348E-03	-1.6657E-03	1.7197E-04	3.0663E-07	5.1334E-06	6.8909E-05
10	1.2915E-03	-1.6643E-03	1.7473E-04	3.0663E-07	5.1334E-06	6.8909E-05
11	1.6016E-03	-1.6643E-03	1.7335E-04	3.0663E-07	5.1334E-06	6.8909E-05
12	1.9117E-03	-1.6643E-03	1.7197E-04	3.0663E-07	5.1334E-06	6.8909E-05
13	1.2684E-03	-1.6629E-03	1.7473E-04	3.0663E-07	5.1334E-06	6.8909E-05
14	1.5785E-03	-1.6629E-03	1.7335E-04	3.0663E-07	5.1334E-06	6.8909E-05
15	1.8886E-03	-1.6629E-03	1.7197E-04	3.0663E-07	5.1334E-06	6.8909E-05
MINIMUM	1.2684E-03	-1.6684E-03	1.7197E-04	3.0663E-07	5.1334E-06	6.8909E-05
Pile N.	13	1	3	1	1	1
MAXIMUM	1.9810E-03	-1.6629E-03	1.7473E-04	3.0663E-07	5.1334E-06	6.8909E-05
Pile N.	3	13	1	1	1	1

\* PILE TOP REACTIONS \*

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>				
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>					
COMMESSA <b>IF28</b>	LOTTO <b>01</b>	CODIFICA <b>E ZZ CL</b>	DOCUMENTO <b>VI0403 001</b>	REV. <b>B</b>	FOGLIO <b>139 di 354</b>

PILE GROUP FOR. X, KN FOR. Y, KN FOR. Z, KN MOM X, KN- M MOM Y, KN- M MOM Z, KN- M

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
1	2374.0	-382.39	41.847	0.1022	-130.03	-1160.1
2	2912.7	-380.24	41.252	0.1022	-128.36	-1155.7
3	3449.3	-479.76	51.430	0.1022	-150.20	-1372.5
4	2333.9	-351.10	38.512	0.1022	-122.69	-1091.2
5	2872.6	-350.50	38.110	0.1022	-121.45	-1090.1
6	3411.3	-444.75	47.760	0.1022	-141.66	-1290.9
7	2293.7	-350.31	38.463	0.1022	-122.58	-1089.0
8	2832.5	-349.74	38.064	0.1022	-121.35	-1088.0
9	3371.2	-444.33	47.760	0.1022	-141.66	-1289.6
10	2253.6	-350.40	38.509	0.1022	-122.69	-1088.9
11	2792.3	-349.83	38.110	0.1022	-121.45	-1087.9
12	3331.1	-443.97	47.767	0.1022	-141.68	-1288.4
13	2213.5	-379.98	41.745	0.1022	-129.81	-1153.3
14	2752.2	-377.84	41.151	0.1022	-128.15	-1149.0
15	3290.9	-477.60	51.395	0.1022	-150.14	-1366.3
MINIMUM	2213.5	-479.76	38.064	0.1022	-150.20	-1372.5
Pile N.	13	3	8	1	3	3
MAXIMUM	3449.3	-349.74	51.430	0.1022	-121.35	-1087.9
Pile N.	3	8	3	1	8	11

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP DISP. x, M DISP. y, M DISP. z, M ROT. x, RAD ROT. y, RAD ROT. z, RAD

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x, RAD	ROT. y, RAD	ROT. z, RAD
1	1.3608E-03	-1.6684E-03	1.7473E-04	3.0663E-07	5.1334E-06	6.8909E-05
2	1.6709E-03	-1.6684E-03	1.7335E-04	3.0663E-07	5.1334E-06	6.8909E-05
3	1.9810E-03	-1.6684E-03	1.7197E-04	3.0663E-07	5.1334E-06	6.8909E-05
4	1.3377E-03	-1.6670E-03	1.7473E-04	3.0663E-07	5.1334E-06	6.8909E-05
5	1.6478E-03	-1.6670E-03	1.7335E-04	3.0663E-07	5.1334E-06	6.8909E-05
6	1.9579E-03	-1.6670E-03	1.7197E-04	3.0663E-07	5.1334E-06	6.8909E-05
7	1.3146E-03	-1.6657E-03	1.7473E-04	3.0663E-07	5.1334E-06	6.8909E-05
8	1.6247E-03	-1.6657E-03	1.7335E-04	3.0663E-07	5.1334E-06	6.8909E-05
9	1.9348E-03	-1.6657E-03	1.7197E-04	3.0663E-07	5.1334E-06	6.8909E-05
10	1.2915E-03	-1.6643E-03	1.7473E-04	3.0663E-07	5.1334E-06	6.8909E-05
11	1.6016E-03	-1.6643E-03	1.7335E-04	3.0663E-07	5.1334E-06	6.8909E-05
12	1.9117E-03	-1.6643E-03	1.7197E-04	3.0663E-07	5.1334E-06	6.8909E-05
13	1.2684E-03	-1.6629E-03	1.7473E-04	3.0663E-07	5.1334E-06	6.8909E-05
14	1.5785E-03	-1.6629E-03	1.7335E-04	3.0663E-07	5.1334E-06	6.8909E-05
15	1.8886E-03	-1.6629E-03	1.7197E-04	3.0663E-07	5.1334E-06	6.8909E-05
MINIMUM	1.2684E-03	-1.6684E-03	1.7197E-04	3.0663E-07	5.1334E-06	6.8909E-05
Pile N.	13	1	3	1	1	1
MAXIMUM	1.9810E-03	-1.6629E-03	1.7473E-04	3.0663E-07	5.1334E-06	6.8909E-05
Pile N.	3	13	1	1	1	1

\* PILE TOP REACTIONS \*







PILE GROUP AXIAL, KN LAT. y, KN LAT. z, KN MOM x, KN- M MOM y, KN- M MOM z, KN- M

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	2374.0	-382.39	41.847	0.1022	-130.03	-1160.1
2	2912.7	-380.24	41.252	0.1022	-128.36	-1155.7
3	3449.3	-479.76	51.430	0.1022	-150.20	-1372.5
4	2333.9	-351.10	38.512	0.1022	-122.69	-1091.2
5	2872.6	-350.50	38.110	0.1022	-121.45	-1090.1
6	3411.3	-444.75	47.760	0.1022	-141.66	-1290.9
7	2293.7	-350.31	38.463	0.1022	-122.58	-1089.0
8	2832.5	-349.74	38.064	0.1022	-121.35	-1088.0
9	3371.2	-444.33	47.760	0.1022	-141.66	-1289.6
10	2253.6	-350.40	38.509	0.1022	-122.69	-1088.9
11	2792.3	-349.83	38.110	0.1022	-121.45	-1087.9
12	3331.1	-443.97	47.767	0.1022	-141.68	-1288.4
13	2213.5	-379.98	41.745	0.1022	-129.81	-1153.3
14	2752.2	-377.84	41.151	0.1022	-128.15	-1149.0
15	3290.9	-477.60	51.395	0.1022	-150.14	-1366.3
MINIMUM	2213.5	-479.76	38.064	0.1022	-150.20	-1372.5
Pile N.	13	3	8	1	3	3
MAXIMUM	3449.3	-349.74	51.430	0.1022	-121.35	-1087.9
Pile N.	3	8	3	1	8	11

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

1	4866.6
2	5157.8
3	6119.0
4	4634.7
5	4935.9
6	5849.8
7	4605.5
8	4906.9
9	5823.2
10	4582.3



<b>APPALTATORE:</b> Consorzio  Soci  	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>						
<b>PROGETTAZIONE:</b> Mandataria  Mandanti  							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">COMMESSA <b>IF28</b></td> <td style="text-align: center;">LOTTO <b>01</b></td> <td style="text-align: center;">CODIFICA <b>E ZZ CL</b></td> <td style="text-align: center;">DOCUMENTO <b>VI0403 001</b></td> <td style="text-align: center;">REV. <b>B</b></td> <td style="text-align: center;">FOGLIO <b>141 di 354</b></td> </tr> </table>	COMMESSA <b>IF28</b>	LOTTO <b>01</b>	CODIFICA <b>E ZZ CL</b>	DOCUMENTO <b>VI0403 001</b>	REV. <b>B</b>	FOGLIO <b>141 di 354</b>
COMMESSA <b>IF28</b>	LOTTO <b>01</b>	CODIFICA <b>E ZZ CL</b>	DOCUMENTO <b>VI0403 001</b>	REV. <b>B</b>	FOGLIO <b>141 di 354</b>		

Max. 3.4029E-05 1.7473E-04 1372.5 68.895 208.87 51.436 72.108 27.507 6119.0 7.8279E+06 7.8279E+06  
Pile N. 3 1 3 3 3 3 3 3 1 1

LOAD CASE : 9  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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	0.6907	1.0000
2	0.6627	1.0000
3	0.8661	1.0000
4	0.5247	1.0000
5	0.4955	1.0000
6	0.7380	1.0000
7	0.5116	1.0000
8	0.4838	1.0000
9	0.7292	1.0000
10	0.5123	1.0000
11	0.4845	1.0000
12	0.7292	1.0000
13	0.5845	1.0000
14	0.5531	1.0000
15	0.7840	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN HOR. LOAD Y, KN HOR. LOAD Z, KN  
45335.9 -1957.07 1025.26

MOMENT X, KN- M MOMENT Y, KN- M MOMENT Z, KN- M  
-162.620 9631.34 -11819.2

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL, M HORIZONTAL Y, M HORIZONTAL Z, M  
1.73402E-03 -3.41732E-04 2.40676E-04

ANGLE ROT. X,RAD ANGLE ROT. Y,RAD ANGLE ROT. Z,RAD  
-6.49751E-07 1.18948E-05 -1.55643E-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	1.9111E-03	-3.3589E-04	2.3775E-04	-6.4975E-07	1.1895E-05	-1.5564E-05
2	1.8411E-03	-3.3589E-04	2.4068E-04	-6.4975E-07	1.1895E-05	-1.5564E-05
3	1.7710E-03	-3.3589E-04	2.4360E-04	-6.4975E-07	1.1895E-05	-1.5564E-05
4	1.8576E-03	-3.3881E-04	2.3775E-04	-6.4975E-07	1.1895E-05	-1.5564E-05
5	1.7875E-03	-3.3881E-04	2.4068E-04	-6.4975E-07	1.1895E-05	-1.5564E-05
6	1.7175E-03	-3.3881E-04	2.4360E-04	-6.4975E-07	1.1895E-05	-1.5564E-05
7	1.8041E-03	-3.4173E-04	2.3775E-04	-6.4975E-07	1.1895E-05	-1.5564E-05
8	1.7340E-03	-3.4173E-04	2.4068E-04	-6.4975E-07	1.1895E-05	-1.5564E-05
9	1.6640E-03	-3.4173E-04	2.4360E-04	-6.4975E-07	1.1895E-05	-1.5564E-05
10	1.7505E-03	-3.4466E-04	2.3775E-04	-6.4975E-07	1.1895E-05	-1.5564E-05
11	1.6805E-03	-3.4466E-04	2.4068E-04	-6.4975E-07	1.1895E-05	-1.5564E-05
12	1.6105E-03	-3.4466E-04	2.4360E-04	-6.4975E-07	1.1895E-05	-1.5564E-05
13	1.6970E-03	-3.4758E-04	2.3775E-04	-6.4975E-07	1.1895E-05	-1.5564E-05
14	1.6270E-03	-3.4758E-04	2.4068E-04	-6.4975E-07	1.1895E-05	-1.5564E-05
15	1.5569E-03	-3.4758E-04	2.4360E-04	-6.4975E-07	1.1895E-05	-1.5564E-05

MINIMUM 1.5569E-03 -3.4758E-04 2.3775E-04 -6.4975E-07 1.1895E-05 -1.5564E-05

Pile N. 15 13 1 1 1 1







MAXIMUM 1.9111E-03 -3.3589E-04 2.4360E-04 -6.4975E-07 1.1895E-05 -1.5564E-05

Pile N. 1 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	3330.1	-134.01	70.505	-0.2166	-198.24	-428.28
2	3208.4	-132.05	70.368	-0.2166	-199.05	-424.34
3	3086.7	-144.87	79.097	-0.2166	-216.96	-449.47

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>												
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   													
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">COMMESSA</td> <td style="width: 10%;">LOTTO</td> <td style="width: 15%;">CODIFICA</td> <td style="width: 15%;">DOCUMENTO</td> <td style="width: 10%;">REV.</td> <td style="width: 10%;">FOGLIO</td> </tr> <tr> <td>IF28</td> <td>01</td> <td>E ZZ CL</td> <td>VI0403 001</td> <td>B</td> <td>142 di 354</td> </tr> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF28	01	E ZZ CL	VI0403 001	B	142 di 354
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO								
IF28	01	E ZZ CL	VI0403 001	B	142 di 354								

4	3237.1	-122.61	63.337	-0.2166	-183.90	-406.06
5	3115.4	-120.13	62.820	-0.2166	-183.84	-400.85
6	2993.7	-138.00	74.325	-0.2166	-207.84	-437.19
7	3144.1	-122.37	62.671	-0.2166	-182.52	-406.50
8	3022.4	-119.96	62.197	-0.2166	-182.53	-401.41
9	2900.7	-138.38	73.934	-0.2166	-207.06	-438.99
10	3051.1	-123.26	62.658	-0.2166	-182.48	-409.31
11	2929.4	-120.83	62.188	-0.2166	-182.50	-404.20
12	2807.7	-139.34	73.885	-0.2166	-206.94	-441.93
13	2958.1	-129.96	65.912	-0.2166	-189.05	-424.13
14	2836.4	-127.42	65.429	-0.2166	-189.11	-418.90
15	2714.7	-143.88	75.929	-0.2166	-210.85	-451.91

MINIMUM	2714.7	-144.87	62.188	-0.2166	-216.96	-451.91
Pile N.	15	3	11	1	3	15
MAXIMUM	3330.1	-119.96	79.097	-0.2166	-182.48	-400.85
Pile N.	1	8	3	1	10	5

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP DISP. x, M DISP. y, M DISP. z, M ROT. x,RAD ROT. y,RAD ROT. z,RAD

1	1.9111E-03	-3.3589E-04	2.3775E-04	-6.4975E-07	1.1895E-05	-1.5564E-05
2	1.8411E-03	-3.3589E-04	2.4068E-04	-6.4975E-07	1.1895E-05	-1.5564E-05
3	1.7710E-03	-3.3589E-04	2.4360E-04	-6.4975E-07	1.1895E-05	-1.5564E-05
4	1.8576E-03	-3.3881E-04	2.3775E-04	-6.4975E-07	1.1895E-05	-1.5564E-05
5	1.7875E-03	-3.3881E-04	2.4068E-04	-6.4975E-07	1.1895E-05	-1.5564E-05
6	1.7175E-03	-3.3881E-04	2.4360E-04	-6.4975E-07	1.1895E-05	-1.5564E-05
7	1.8041E-03	-3.4173E-04	2.3775E-04	-6.4975E-07	1.1895E-05	-1.5564E-05
8	1.7340E-03	-3.4173E-04	2.4068E-04	-6.4975E-07	1.1895E-05	-1.5564E-05
9	1.6640E-03	-3.4173E-04	2.4360E-04	-6.4975E-07	1.1895E-05	-1.5564E-05
10	1.7505E-03	-3.4466E-04	2.3775E-04	-6.4975E-07	1.1895E-05	-1.5564E-05
11	1.6805E-03	-3.4466E-04	2.4068E-04	-6.4975E-07	1.1895E-05	-1.5564E-05
12	1.6105E-03	-3.4466E-04	2.4360E-04	-6.4975E-07	1.1895E-05	-1.5564E-05
13	1.6970E-03	-3.4758E-04	2.3775E-04	-6.4975E-07	1.1895E-05	-1.5564E-05
14	1.6270E-03	-3.4758E-04	2.4068E-04	-6.4975E-07	1.1895E-05	-1.5564E-05
15	1.5569E-03	-3.4758E-04	2.4360E-04	-6.4975E-07	1.1895E-05	-1.5564E-05

MINIMUM	1.5569E-03	-3.4758E-04	2.3775E-04	-6.4975E-07	1.1895E-05	-1.5564E-05
Pile N.	15	13	1	1	1	1
MAXIMUM	1.9111E-03	-3.3589E-04	2.4360E-04	-6.4975E-07	1.1895E-05	-1.5564E-05
Pile N.	1	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	3330.1	-134.01	70.505	-0.2166	-198.24	-428.28
2	3208.4	-132.05	70.368	-0.2166	-199.05	-424.34
3	3086.7	-144.87	79.097	-0.2166	-216.96	-449.47
4	3237.1	-122.61	63.337	-0.2166	-183.90	-406.06
5	3115.4	-120.13	62.820	-0.2166	-183.84	-400.85
6	2993.7	-138.00	74.325	-0.2166	-207.84	-437.19
7	3144.1	-122.37	62.671	-0.2166	-182.52	-406.50
8	3022.4	-119.96	62.197	-0.2166	-182.53	-401.41
9	2900.7	-138.38	73.934	-0.2166	-207.06	-438.99
10	3051.1	-123.26	62.658	-0.2166	-182.48	-409.31
11	2929.4	-120.83	62.188	-0.2166	-182.50	-404.20
12	2807.7	-139.34	73.885	-0.2166	-206.94	-441.93
13	2958.1	-129.96	65.912	-0.2166	-189.05	-424.13
14	2836.4	-127.42	65.429	-0.2166	-189.11	-418.90
15	2714.7	-143.88	75.929	-0.2166	-210.85	-451.91

MINIMUM	2714.7	-144.87	62.188	-0.2166	-216.96	-451.91
Pile N.	15	3	11	1	3	15
MAXIMUM	3330.1	-119.96	79.097	-0.2166	-182.48	-400.85
Pile N.	1	8	3	1	10	5

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

1	3308.8
2	3230.1
3	3253.0
4	3177.1
5	3093.9
6	3155.1
7	3124.0
8	3041.2
9	3106.4
10	3079.1
11	2996.2
12	3061.6
13	3075.4
14	2992.2
15	3041.2



<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>											
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   												
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>												
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">COMMESSA</td> <td style="width: 10%;">LOTTO</td> <td style="width: 15%;">CODIFICA</td> <td style="width: 15%;">DOCUMENTO</td> <td style="width: 10%;">REV.</td> <td style="width: 10%;">FOGLIO</td> </tr> <tr> <td>IF28</td> <td>01</td> <td>E ZZ CL</td> <td>VI0403 001</td> <td>B</td> <td>144 di 354</td> </tr> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF28	01	E ZZ CL	VI0403 001	B	144 di 354
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO							
IF28	01	E ZZ CL	VI0403 001	B	144 di 354							

CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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	0.5900	1.0000
2	0.5833	1.0000
3	0.8661	1.0000
4	0.4969	1.0000
5	0.4951	1.0000
6	0.8022	1.0000
7	0.4953	1.0000
8	0.4936	1.0000
9	0.8018	1.0000
10	0.4963	1.0000
11	0.4946	1.0000
12	0.8018	1.0000
13	0.5845	1.0000
14	0.5779	1.0000
15	0.8623	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN HOR. LOAD Y, KN HOR. LOAD Z, KN  
34190.9 -5453.21 730.964

MOMENT X, KN- M MOMENT Y, KN- M MOMENT Z, KN- M  
-267.113 6103.67 14481.0

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL, M HORIZONTAL Y, M HORIZONTAL Z, M  
1.30636E-03 -1.57852E-03 1.99693E-04

ANGLE ROT. X,RAD ANGLE ROT. Y,RAD ANGLE ROT. Z,RAD  
-7.31428E-08 7.86416E-06 8.62215E-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	9.8914E-04	-1.5779E-03	1.9936E-04	-7.3143E-08	7.8642E-06	8.6221E-05
2	1.3771E-03	-1.5779E-03	1.9969E-04	-7.3143E-08	7.8642E-06	8.6221E-05
3	1.7651E-03	-1.5779E-03	2.0002E-04	-7.3143E-08	7.8642E-06	8.6221E-05
4	9.5375E-04	-1.5782E-03	1.9936E-04	-7.3143E-08	7.8642E-06	8.6221E-05
5	1.3417E-03	-1.5782E-03	1.9969E-04	-7.3143E-08	7.8642E-06	8.6221E-05
6	1.7297E-03	-1.5782E-03	2.0002E-04	-7.3143E-08	7.8642E-06	8.6221E-05
7	9.1836E-04	-1.5785E-03	1.9936E-04	-7.3143E-08	7.8642E-06	8.6221E-05
8	1.3064E-03	-1.5785E-03	1.9969E-04	-7.3143E-08	7.8642E-06	8.6221E-05
9	1.6944E-03	-1.5785E-03	2.0002E-04	-7.3143E-08	7.8642E-06	8.6221E-05
10	8.8297E-04	-1.5788E-03	1.9936E-04	-7.3143E-08	7.8642E-06	8.6221E-05
11	1.2710E-03	-1.5788E-03	1.9969E-04	-7.3143E-08	7.8642E-06	8.6221E-05
12	1.6590E-03	-1.5788E-03	2.0002E-04	-7.3143E-08	7.8642E-06	8.6221E-05
13	8.4758E-04	-1.5792E-03	1.9936E-04	-7.3143E-08	7.8642E-06	8.6221E-05
14	1.2356E-03	-1.5792E-03	1.9969E-04	-7.3143E-08	7.8642E-06	8.6221E-05
15	1.6236E-03	-1.5792E-03	2.0002E-04	-7.3143E-08	7.8642E-06	8.6221E-05

MINIMUM 8.4758E-04 -1.5792E-03 1.9936E-04 -7.3143E-08 7.8642E-06 8.6221E-05

Pile N. 13 13 1 1 1 1

MAXIMUM 1.7651E-03 -1.5779E-03 2.0002E-04 -7.3143E-08 7.8642E-06 8.6221E-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	1728.3	-349.13	46.764	-0.024378	-141.98	-1024.9
2	2402.4	-347.00	46.573	-0.024378	-141.71	-1020.6
3	3076.4	-437.15	58.524	-0.024378	-167.72	-1215.3
4	1666.8	-320.33	42.975	-0.024378	-133.71	-962.30
5	2340.9	-319.59	42.960	-0.024378	-133.80	-960.99
6	3015.0	-423.52	56.725	-0.024378	-164.25	-1189.2
7	1605.3	-319.87	42.904	-0.024378	-133.54	-961.35
8	2279.4	-319.16	42.893	-0.024378	-133.65	-960.11
9	2953.5	-423.54	56.714	-0.024378	-164.22	-1189.4



<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>				
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>					
<b>COMMESSA</b> IF28	<b>LOTTO</b> 01	<b>CODIFICA</b> E ZZ CL	<b>DOCUMENTO</b> VI0403 001	<b>REV.</b> B	<b>FOGLIO</b> 145 di 354

10	1543.8	-320.29	42.948	-0.024378	-133.64	-962.33
11	2217.9	-319.58	42.938	-0.024378	-133.75	-961.10
12	2892.0	-423.65	56.714	-0.024378	-164.22	-1189.7
13	1482.3	-347.86	46.551	-0.024378	-141.51	-1022.4
14	2156.4	-345.72	46.359	-0.024378	-141.23	-1018.1
15	2830.5	-436.81	58.423	-0.024378	-167.51	-1215.0

MINIMUM	1482.3	-437.15	42.893	-0.024378	-167.72	-1215.3
Pile N.	13	3	8	1	3	3
MAXIMUM	3076.4	-319.16	58.524	-0.024378	-133.54	-960.11
Pile N.	3	8	3	1	7	8

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP DISP. x, M DISP. y, M DISP. z, M ROT. x,RAD ROT. y,RAD ROT. z,RAD

1	9.8914E-04	-1.5779E-03	1.9936E-04	-7.3143E-08	7.8642E-06	8.6221E-05
2	1.3771E-03	-1.5779E-03	1.9969E-04	-7.3143E-08	7.8642E-06	8.6221E-05
3	1.7651E-03	-1.5779E-03	2.0002E-04	-7.3143E-08	7.8642E-06	8.6221E-05
4	9.5375E-04	-1.5782E-03	1.9936E-04	-7.3143E-08	7.8642E-06	8.6221E-05
5	1.3417E-03	-1.5782E-03	1.9969E-04	-7.3143E-08	7.8642E-06	8.6221E-05
6	1.7297E-03	-1.5782E-03	2.0002E-04	-7.3143E-08	7.8642E-06	8.6221E-05
7	9.1836E-04	-1.5785E-03	1.9936E-04	-7.3143E-08	7.8642E-06	8.6221E-05
8	1.3064E-03	-1.5785E-03	1.9969E-04	-7.3143E-08	7.8642E-06	8.6221E-05
9	1.6944E-03	-1.5785E-03	2.0002E-04	-7.3143E-08	7.8642E-06	8.6221E-05
10	8.8297E-04	-1.5788E-03	1.9936E-04	-7.3143E-08	7.8642E-06	8.6221E-05
11	1.2710E-03	-1.5788E-03	1.9969E-04	-7.3143E-08	7.8642E-06	8.6221E-05
12	1.6590E-03	-1.5788E-03	2.0002E-04	-7.3143E-08	7.8642E-06	8.6221E-05
13	8.4758E-04	-1.5792E-03	1.9936E-04	-7.3143E-08	7.8642E-06	8.6221E-05
14	1.2356E-03	-1.5792E-03	1.9969E-04	-7.3143E-08	7.8642E-06	8.6221E-05
15	1.6236E-03	-1.5792E-03	2.0002E-04	-7.3143E-08	7.8642E-06	8.6221E-05

MINIMUM	8.4758E-04	-1.5792E-03	1.9936E-04	-7.3143E-08	7.8642E-06	8.6221E-05
Pile N.	13	13	1	1	1	1
MAXIMUM	1.7651E-03	-1.5779E-03	2.0002E-04	-7.3143E-08	7.8642E-06	8.6221E-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	1728.3	-349.13	46.764	-0.024378	-141.98	-1024.9
2	2402.4	-347.00	46.573	-0.024378	-141.71	-1020.6
3	3076.4	-437.15	58.524	-0.024378	-167.72	-1215.3
4	1666.8	-320.33	42.975	-0.024378	-133.71	-962.30
5	2340.9	-319.59	42.960	-0.024378	-133.80	-960.99
6	3015.0	-423.52	56.725	-0.024378	-164.25	-1189.2
7	1605.3	-319.87	42.904	-0.024378	-133.54	-961.35
8	2279.4	-319.16	42.893	-0.024378	-133.65	-960.11
9	2953.5	-423.54	56.714	-0.024378	-164.22	-1189.4
10	1543.8	-320.29	42.948	-0.024378	-133.64	-962.33
11	2217.9	-319.58	42.938	-0.024378	-133.75	-961.10
12	2892.0	-423.65	56.714	-0.024378	-164.22	-1189.7
13	1482.3	-347.86	46.551	-0.024378	-141.51	-1022.4
14	2156.4	-345.72	46.359	-0.024378	-141.23	-1018.1
15	2830.5	-436.81	58.423	-0.024378	-167.51	-1215.0

MINIMUM	1482.3	-437.15	42.893	-0.024378	-167.72	-1215.3
Pile N.	13	3	8	1	3	3
MAXIMUM	3076.4	-319.16	58.524	-0.024378	-133.54	-960.11
Pile N.	3	8	3	1	7	8







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

1	4100.6
2	4469.2
3	5443.5
4	3875.4
5	4253.0
6	5329.3
7	3837.7
8	4215.5
9	5294.9
10	3805.9
11	4183.7
12	5261.0
13	3953.9
14	4322.4
15	5303.4

MINIMUM	3805.9
Pile N.	10
MAXIMUM	5443.5
Pile N.	3

\* EFFECTS FOR LATERALLY LOADED PILE \*



<b>APPALTATORE:</b> Consorzio <span style="margin-left: 100px;">Soci</span>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>												
<b>PROGETTAZIONE:</b> Mandataria <span style="margin-left: 100px;">Mandanti</span>   													
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">COMMESSA</td> <td style="width: 10%;">LOTTO</td> <td style="width: 15%;">CODIFICA</td> <td style="width: 15%;">DOCUMENTO</td> <td style="width: 10%;">REV.</td> <td style="width: 10%;">FOGLIO</td> </tr> <tr> <td>IF28</td> <td>01</td> <td>E ZZ CL</td> <td>VI0403 001</td> <td>B</td> <td>147 di 354</td> </tr> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF28	01	E ZZ CL	VI0403 001	B	147 di 354
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO								
IF28	01	E ZZ CL	VI0403 001	B	147 di 354								

GROUP NO P-FACTOR Y-FACTOR

1	0.6269	1.0000
2	0.6121	1.0000
3	0.8661	1.0000
4	0.5068	1.0000
5	0.4952	1.0000
6	0.7804	1.0000
7	0.5010	1.0000
8	0.4902	1.0000
9	0.7773	1.0000
10	0.5019	1.0000
11	0.4911	1.0000
12	0.7773	1.0000
13	0.5845	1.0000
14	0.5694	1.0000
15	0.8359	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN    HOR. LOAD Y, KN    HOR. LOAD Z, KN  
 44370.3            -2223.28            774.978

MOMENT X, KN- M    MOMENT Y, KN- M    MOMENT Z, KN- M  
 -436.180            7724.01            -2124.15

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL, M    HORIZONTAL Y, M    HORIZONTAL Z, M  
 1.69697E-03    -4.87398E-04        1.84888E-04

ANGLE ROT. X,RAD    ANGLE ROT. Y,RAD    ANGLE ROT. Z,RAD  
 -1.35266E-06    9.40927E-06        1.27764E-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	1.7242E-03	-4.7522E-04	1.7880E-04	-1.3527E-06	9.4093E-06	1.2776E-05
2	1.7817E-03	-4.7522E-04	1.8489E-04	-1.3527E-06	9.4093E-06	1.2776E-05
3	1.8391E-03	-4.7522E-04	1.9097E-04	-1.3527E-06	9.4093E-06	1.2776E-05
4	1.6818E-03	-4.8131E-04	1.7880E-04	-1.3527E-06	9.4093E-06	1.2776E-05
5	1.7393E-03	-4.8131E-04	1.8489E-04	-1.3527E-06	9.4093E-06	1.2776E-05
6	1.7968E-03	-4.8131E-04	1.9097E-04	-1.3527E-06	9.4093E-06	1.2776E-05
7	1.6395E-03	-4.8740E-04	1.7880E-04	-1.3527E-06	9.4093E-06	1.2776E-05
8	1.6970E-03	-4.8740E-04	1.8489E-04	-1.3527E-06	9.4093E-06	1.2776E-05
9	1.7545E-03	-4.8740E-04	1.9097E-04	-1.3527E-06	9.4093E-06	1.2776E-05
10	1.5971E-03	-4.9348E-04	1.7880E-04	-1.3527E-06	9.4093E-06	1.2776E-05
11	1.6546E-03	-4.9348E-04	1.8489E-04	-1.3527E-06	9.4093E-06	1.2776E-05
12	1.7121E-03	-4.9348E-04	1.9097E-04	-1.3527E-06	9.4093E-06	1.2776E-05
13	1.5548E-03	-4.9957E-04	1.7880E-04	-1.3527E-06	9.4093E-06	1.2776E-05
14	1.6123E-03	-4.9957E-04	1.8489E-04	-1.3527E-06	9.4093E-06	1.2776E-05
15	1.6698E-03	-4.9957E-04	1.9097E-04	-1.3527E-06	9.4093E-06	1.2776E-05

MINIMUM    1.5548E-03    -4.9957E-04    1.7880E-04    -1.3527E-06    9.4093E-06    1.2776E-05

Pile N.    13    13    1    1    1    1







MAXIMUM    1.8391E-03    -4.7522E-04    1.9097E-04    -1.3527E-06    9.4093E-06    1.2776E-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	3005.3	-145.42	49.975	-0.4508	-141.74	-431.83
2	3105.1	-144.03	51.494	-0.4508	-146.98	-429.04
3	3205.0	-164.04	61.174	-0.4508	-168.06	-468.00
4	2931.7	-135.87	45.914	-0.4508	-133.51	-414.49
5	3031.6	-134.61	47.332	-0.4508	-138.52	-411.87
6	3131.5	-159.72	58.677	-0.4508	-163.29	-462.07
7	2858.1	-136.95	45.640	-0.4508	-132.92	-418.72
8	2958.0	-135.74	47.072	-0.4508	-137.96	-416.21
9	3057.9	-161.46	58.505	-0.4508	-162.92	-467.68
10	2784.6	-138.70	45.604	-0.4508	-132.83	-424.36
11	2884.5	-137.49	47.037	-0.4508	-137.86	-421.83
12	2984.3	-163.43	58.427	-0.4508	-162.74	-473.76
13	2711.0	-148.70	48.343	-0.4508	-138.37	-446.85
14	2810.9	-147.15	49.768	-0.4508	-143.41	-443.70
15	2910.8	-169.99	60.019	-0.4508	-165.74	-488.63

<b>APPALTATORE:</b> Consorzio <span style="margin-left: 100px;">Soci</span>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>												
<b>PROGETTAZIONE:</b> Mandataria <span style="margin-left: 100px;">Mandanti</span>   													
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">COMMESSA</td> <td style="width: 10%;">LOTTO</td> <td style="width: 15%;">CODIFICA</td> <td style="width: 15%;">DOCUMENTO</td> <td style="width: 10%;">REV.</td> <td style="width: 10%;">FOGLIO</td> </tr> <tr> <td>IF28</td> <td>01</td> <td>E ZZ CL</td> <td>VI0403 001</td> <td>B</td> <td>148 di 354</td> </tr> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF28	01	E ZZ CL	VI0403 001	B	148 di 354
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO								
IF28	01	E ZZ CL	VI0403 001	B	148 di 354								

MINIMUM	2711.0	-169.99	45.604	-0.4508	-168.06	-488.63
Pile N.	13	15	10	1	3	15
MAXIMUM	3205.0	-134.61	61.174	-0.4508	-132.83	-411.87
Pile N.	3	5	3	1	10	5

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP DISP. x, M DISP. y, M DISP. z, M ROT. x,RAD ROT. y,RAD ROT. z,RAD

1	1.7242E-03	-4.7522E-04	1.7880E-04	-1.3527E-06	9.4093E-06	1.2776E-05
2	1.7817E-03	-4.7522E-04	1.8489E-04	-1.3527E-06	9.4093E-06	1.2776E-05
3	1.8391E-03	-4.7522E-04	1.9097E-04	-1.3527E-06	9.4093E-06	1.2776E-05
4	1.6818E-03	-4.8131E-04	1.7880E-04	-1.3527E-06	9.4093E-06	1.2776E-05
5	1.7393E-03	-4.8131E-04	1.8489E-04	-1.3527E-06	9.4093E-06	1.2776E-05
6	1.7968E-03	-4.8131E-04	1.9097E-04	-1.3527E-06	9.4093E-06	1.2776E-05
7	1.6395E-03	-4.8740E-04	1.7880E-04	-1.3527E-06	9.4093E-06	1.2776E-05
8	1.6970E-03	-4.8740E-04	1.8489E-04	-1.3527E-06	9.4093E-06	1.2776E-05
9	1.7545E-03	-4.8740E-04	1.9097E-04	-1.3527E-06	9.4093E-06	1.2776E-05
10	1.5971E-03	-4.9348E-04	1.7880E-04	-1.3527E-06	9.4093E-06	1.2776E-05
11	1.6546E-03	-4.9348E-04	1.8489E-04	-1.3527E-06	9.4093E-06	1.2776E-05
12	1.7121E-03	-4.9348E-04	1.9097E-04	-1.3527E-06	9.4093E-06	1.2776E-05
13	1.5548E-03	-4.9957E-04	1.7880E-04	-1.3527E-06	9.4093E-06	1.2776E-05
14	1.6123E-03	-4.9957E-04	1.8489E-04	-1.3527E-06	9.4093E-06	1.2776E-05
15	1.6698E-03	-4.9957E-04	1.9097E-04	-1.3527E-06	9.4093E-06	1.2776E-05

MINIMUM	1.5548E-03	-4.9957E-04	1.7880E-04	-1.3527E-06	9.4093E-06	1.2776E-05
Pile N.	13	15	10	1	3	15
MAXIMUM	1.8391E-03	-4.7522E-04	1.9097E-04	-1.3527E-06	9.4093E-06	1.2776E-05
Pile N.	3	5	3	1	10	5

\* 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	3005.3	-145.42	49.975	-0.4508	-141.74	-431.83
2	3105.1	-144.03	51.494	-0.4508	-146.98	-429.04
3	3205.0	-164.04	61.174	-0.4508	-168.06	-468.00
4	2931.7	-135.87	45.914	-0.4508	-133.51	-414.49
5	3031.6	-134.61	47.332	-0.4508	-138.52	-411.87
6	3131.5	-159.72	58.677	-0.4508	-163.29	-462.07
7	2858.1	-136.95	45.640	-0.4508	-132.92	-418.72
8	2958.0	-135.74	47.072	-0.4508	-137.96	-416.21
9	3057.9	-161.46	58.505	-0.4508	-162.92	-467.68
10	2784.6	-138.70	45.604	-0.4508	-132.83	-424.36
11	2884.5	-137.49	47.037	-0.4508	-137.86	-421.83
12	2984.3	-163.43	58.427	-0.4508	-162.74	-473.76
13	2711.0	-148.70	48.343	-0.4508	-138.37	-446.85
14	2810.9	-147.15	49.768	-0.4508	-143.41	-443.70
15	2910.8	-169.99	60.019	-0.4508	-165.74	-488.63

MINIMUM	2711.0	-169.99	45.604	-0.4508	-168.06	-488.63
Pile N.	13	15	10	1	3	15
MAXIMUM	3205.0	-134.61	61.174	-0.4508	-132.83	-411.87
Pile N.	3	5	3	1	10	5

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

1	3072.3
2	3125.9
3	3314.4
4	2973.2
5	3027.0
6	3251.1
7	2943.2
8	2997.2
9	3225.1
10	2917.8
11	2971.6
12	3200.6
13	2945.9
14	2998.0
15	3204.4







MINIMUM	2917.8
Pile N.	10
MAXIMUM	3314.4
Pile N.	3

\* 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	z-Dir	y-Dir	z-Dir	y-Dir	z-Dir
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2	KN- M**2	KN- M**2



<b>APPALTATORE:</b> Consorzio  Soci  	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>												
<b>PROGETTAZIONE:</b> Mandataria  Mandanti  													
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	<table border="1"> <tr> <td>COMMESSA</td> <td>LOTTO</td> <td>CODIFICA</td> <td>DOCUMENTO</td> <td>REV.</td> <td>FOGLIO</td> </tr> <tr> <td>IF28</td> <td>01</td> <td>E ZZ CL</td> <td>VI0403 001</td> <td>B</td> <td>150 di 354</td> </tr> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF28	01	E ZZ CL	VI0403 001	B	150 di 354
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO								
IF28	01	E ZZ CL	VI0403 001	B	150 di 354								

5	0.4951	1.0000
6	0.7980	1.0000
7	0.4964	1.0000
8	0.4929	1.0000
9	0.7971	1.0000
10	0.4974	1.0000
11	0.4939	1.0000
12	0.7971	1.0000
13	0.5845	1.0000
14	0.5762	1.0000
15	0.8572	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN    HOR. LOAD Y, KN    HOR. LOAD Z, KN  
 39259.2            -3976.13            747.880

MOMENT X, KN- M    MOMENT Y, KN- M    MOMENT Z, KN- M  
 -74.4689            6801.50            -1210.87

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL, M    HORIZONTAL Y, M    HORIZONTAL Z, M  
 1.50084E-03    -9.58391E-04    1.89129E-04

ANGLE ROT. X,RAD    ANGLE ROT. Y,RAD    ANGLE ROT. Z,RAD  
 3.03455E-07    8.51836E-06    3.04608E-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

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
1	1.4404E-03	-9.6112E-04	1.9049E-04	3.0346E-07	8.5184E-06	3.0461E-05
2	1.5775E-03	-9.6112E-04	1.8913E-04	3.0346E-07	8.5184E-06	3.0461E-05
3	1.7146E-03	-9.6112E-04	1.8776E-04	3.0346E-07	8.5184E-06	3.0461E-05
4	1.4021E-03	-9.5976E-04	1.9049E-04	3.0346E-07	8.5184E-06	3.0461E-05
5	1.5392E-03	-9.5976E-04	1.8913E-04	3.0346E-07	8.5184E-06	3.0461E-05
6	1.6763E-03	-9.5976E-04	1.8776E-04	3.0346E-07	8.5184E-06	3.0461E-05
7	1.3638E-03	-9.5839E-04	1.9049E-04	3.0346E-07	8.5184E-06	3.0461E-05
8	1.5008E-03	-9.5839E-04	1.8913E-04	3.0346E-07	8.5184E-06	3.0461E-05
9	1.6379E-03	-9.5839E-04	1.8776E-04	3.0346E-07	8.5184E-06	3.0461E-05
10	1.3254E-03	-9.5703E-04	1.9049E-04	3.0346E-07	8.5184E-06	3.0461E-05
11	1.4625E-03	-9.5703E-04	1.8913E-04	3.0346E-07	8.5184E-06	3.0461E-05
12	1.5996E-03	-9.5703E-04	1.8776E-04	3.0346E-07	8.5184E-06	3.0461E-05
13	1.2871E-03	-9.5566E-04	1.9049E-04	3.0346E-07	8.5184E-06	3.0461E-05
14	1.4242E-03	-9.5566E-04	1.8913E-04	3.0346E-07	8.5184E-06	3.0461E-05
15	1.5612E-03	-9.5566E-04	1.8776E-04	3.0346E-07	8.5184E-06	3.0461E-05

MINIMUM    1.2871E-03    -9.6112E-04    1.8776E-04    3.0346E-07    8.5184E-06    3.0461E-05

Pile N.    13    1    3    1    1    1

MAXIMUM    1.7146E-03    -9.5566E-04    1.9049E-04    3.0346E-07    8.5184E-06    3.0461E-05

Pile N.    3    13    1    1    1    1

\* PILE TOP REACTIONS \*

PILE GROUP    FOR. X, KN    FOR. Y, KN    FOR. Z, KN    MOM X, KN- M    MOM Y, KN- M    MOM Z, KN- M



PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
1	2512.3	-262.01	49.547	0.1011	-145.94	-790.69
2	2750.5	-260.54	48.852	0.1011	-144.07	-787.77
3	2988.6	-303.17	56.528	0.1011	-158.65	-871.79
4	2445.7	-243.77	46.112	0.1011	-138.88	-752.63
5	2683.9	-243.02	45.582	0.1011	-137.34	-751.14
6	2922.0	-293.13	54.710	0.1011	-155.17	-852.00
7	2379.1	-242.97	46.031	0.1011	-138.71	-750.50
8	2617.3	-242.26	45.510	0.1011	-137.19	-749.09
9	2855.4	-292.60	54.696	0.1011	-155.14	-850.45
10	2312.5	-242.83	46.079	0.1011	-138.81	-749.76
11	2550.7	-242.13	45.558	0.1011	-137.29	-748.36
12	2788.8	-292.20	54.708	0.1011	-155.16	-849.17
13	2245.9	-258.35	49.160	0.1011	-145.15	-781.37
14	2484.1	-256.87	48.465	0.1011	-143.28	-778.42
15	2722.2	-300.29	56.341	0.1011	-158.29	-864.20

MINIMUM    2245.9    -303.17    45.510    0.1011    -158.65    -871.79

Pile N.    13    3    8    1    3    3

MAXIMUM    2988.6    -242.13    56.528    0.1011    -137.19    -748.36

Pile N.    3    11    3    1    8    11

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	

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

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
1	1.4404E-03	-9.6112E-04	1.9049E-04	3.0346E-07	8.5184E-06	3.0461E-05
2	1.5775E-03	-9.6112E-04	1.8913E-04	3.0346E-07	8.5184E-06	3.0461E-05
3	1.7146E-03	-9.6112E-04	1.8776E-04	3.0346E-07	8.5184E-06	3.0461E-05
4	1.4021E-03	-9.5976E-04	1.9049E-04	3.0346E-07	8.5184E-06	3.0461E-05
5	1.5392E-03	-9.5976E-04	1.8913E-04	3.0346E-07	8.5184E-06	3.0461E-05
6	1.6763E-03	-9.5976E-04	1.8776E-04	3.0346E-07	8.5184E-06	3.0461E-05
7	1.3638E-03	-9.5839E-04	1.9049E-04	3.0346E-07	8.5184E-06	3.0461E-05
8	1.5008E-03	-9.5839E-04	1.8913E-04	3.0346E-07	8.5184E-06	3.0461E-05
9	1.6379E-03	-9.5839E-04	1.8776E-04	3.0346E-07	8.5184E-06	3.0461E-05
10	1.3254E-03	-9.5703E-04	1.9049E-04	3.0346E-07	8.5184E-06	3.0461E-05
11	1.4625E-03	-9.5703E-04	1.8913E-04	3.0346E-07	8.5184E-06	3.0461E-05
12	1.5996E-03	-9.5703E-04	1.8776E-04	3.0346E-07	8.5184E-06	3.0461E-05
13	1.2871E-03	-9.5566E-04	1.9049E-04	3.0346E-07	8.5184E-06	3.0461E-05
14	1.4242E-03	-9.5566E-04	1.8913E-04	3.0346E-07	8.5184E-06	3.0461E-05
15	1.5612E-03	-9.5566E-04	1.8776E-04	3.0346E-07	8.5184E-06	3.0461E-05

MINIMUM	1.2871E-03	-9.6112E-04	1.8776E-04	3.0346E-07	8.5184E-06	3.0461E-05
Pile N.	13	1	3	1	1	1
MAXIMUM	1.7146E-03	-9.5566E-04	1.9049E-04	3.0346E-07	8.5184E-06	3.0461E-05
Pile N.	3	13	1	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP AXIAL, KN LAT. y, KN LAT. z, KN MOM x, KN- M MOM y, KN- M MOM z, KN- M

PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	2512.3	-262.01	49.547	0.1011	-145.94	-790.69
2	2750.5	-260.54	48.852	0.1011	-144.07	-787.77
3	2988.6	-303.17	56.528	0.1011	-158.65	-871.79
4	2445.7	-243.77	46.112	0.1011	-138.88	-752.63
5	2683.9	-243.02	45.582	0.1011	-137.34	-751.14
6	2922.0	-293.13	54.710	0.1011	-155.17	-852.00
7	2379.1	-242.97	46.031	0.1011	-138.71	-750.50
8	2617.3	-242.26	45.510	0.1011	-137.19	-749.09
9	2855.4	-292.60	54.696	0.1011	-155.14	-850.45
10	2312.5	-242.83	46.079	0.1011	-138.81	-749.76
11	2550.7	-242.13	45.558	0.1011	-137.29	-748.36
12	2788.8	-292.20	54.708	0.1011	-155.16	-849.17
13	2245.9	-258.35	49.160	0.1011	-145.15	-781.37
14	2484.1	-256.87	48.465	0.1011	-143.28	-778.42
15	2722.2	-300.29	56.341	0.1011	-158.29	-864.20

MINIMUM	2245.9	-303.17	45.510	0.1011	-158.65	-871.79
Pile N.	13	3	8	1	3	3
MAXIMUM	2988.6	-242.13	56.528	0.1011	-137.19	-748.36
Pile N.	3	11	3	1	8	11

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

1	3848.3
2	3973.4
3	4365.5
4	3693.8
5	3823.3
6	4267.2
7	3649.7
8	3779.5
9	4224.9
10	3609.9
11	3739.7
12	4183.4
13	3669.5
14	3794.5
15	4192.1

MINIMUM	3609.9
Pile N.	10
MAXIMUM	4365.5
Pile N.	3







\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT KN- M	MOMENT KN- M	MOMENT KN	SHEAR KN	SHEAR KN/ M	SOIL REACT KN/ M	SOIL REACT KN/ M**2	TOTAL FLEX. RIG.	SOIL REACT KN- M**2	TOTAL FLEX. RIG.
1	-9.6112E-04	-4.2300E-06	-369.75	-145.94	-262.03	-21.787	-142.28	-6.4665	1421.7	7.8279E+06	7.8279E+06	
x (M)	0.0000	9.1800	5.7600	0.0000	0.0000	7.5600	4.1400	9.0000	18.000	0.0000	0.0000	
2	-9.6112E-04	-4.2107E-06	-368.31	-144.07	-260.56	-21.477	-140.77	-6.3383	1556.4	7.8279E+06	7.8279E+06	
x (M)	0.0000	9.1800	5.7600	0.0000	0.0000	7.5600	4.1400	9.0000	18.000	0.0000	0.0000	
3	-9.6112E-04	-3.8051E-06	-409.59	-158.65	-303.20	-25.591	-188.21	-8.3963	1691.2	7.8279E+06	7.8279E+06	





<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	
COMMESSA <b>IF28</b> LOTTO <b>01</b> CODIFICA <b>E ZZ CL</b> DOCUMENTO <b>VI0403 001</b> REV. <b>B</b> FOGLIO <b>153 di 354</b>	

11	0.4951	1.0000
12	0.4955	1.0000
13	0.8661	1.0000
14	0.5791	1.0000
15	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
27741.6	12049.6	87.4731
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-28.2345	840.585	-46672.3

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
1.08818E-03	4.38710E-03	3.01995E-05
ANGLE ROT. X,RAD	ANGLE ROT. Y,RAD	ANGLE ROT. Z,RAD
-4.06870E-07	1.24241E-06	-2.44314E-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

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
1	2.1988E-03	4.3908E-03	2.8369E-05	-4.0687E-07	1.2424E-06	-2.4431E-04
2	1.0994E-03	4.3908E-03	3.0200E-05	-4.0687E-07	1.2424E-06	-2.4431E-04
3	-4.8743E-08	4.3908E-03	3.2030E-05	-4.0687E-07	1.2424E-06	-2.4431E-04
4	2.1932E-03	4.3889E-03	2.8369E-05	-4.0687E-07	1.2424E-06	-2.4431E-04
5	1.0938E-03	4.3889E-03	3.0200E-05	-4.0687E-07	1.2424E-06	-2.4431E-04
6	-5.6396E-06	4.3889E-03	3.2030E-05	-4.0687E-07	1.2424E-06	-2.4431E-04
7	2.1876E-03	4.3871E-03	2.8369E-05	-4.0687E-07	1.2424E-06	-2.4431E-04
8	1.0882E-03	4.3871E-03	3.0200E-05	-4.0687E-07	1.2424E-06	-2.4431E-04
9	-1.1231E-05	4.3871E-03	3.2030E-05	-4.0687E-07	1.2424E-06	-2.4431E-04
10	2.1820E-03	4.3853E-03	2.8369E-05	-4.0687E-07	1.2424E-06	-2.4431E-04
11	1.0826E-03	4.3853E-03	3.0200E-05	-4.0687E-07	1.2424E-06	-2.4431E-04
12	-1.6821E-05	4.3853E-03	3.2030E-05	-4.0687E-07	1.2424E-06	-2.4431E-04
13	2.1764E-03	4.3834E-03	2.8369E-05	-4.0687E-07	1.2424E-06	-2.4431E-04
14	1.0770E-03	4.3834E-03	3.0200E-05	-4.0687E-07	1.2424E-06	-2.4431E-04
15	-2.2412E-05	4.3834E-03	3.2030E-05	-4.0687E-07	1.2424E-06	-2.4431E-04

MINIMUM	-2.2412E-05	4.3834E-03	2.8369E-05	-4.0687E-07	1.2424E-06	-2.4431E-04
Pile N.	15	13	1	1	1	1
MAXIMUM	2.1988E-03	4.3908E-03	3.2030E-05	-4.0687E-07	1.2424E-06	-2.4431E-04
Pile N.	1	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

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
1	3678.1	968.29	6.5451	-0.1356	-19.351	2783.8
2	1919.8	772.09	5.6369	-0.1356	-17.822	2350.9
3	-0.079931	777.26	6.0739	-0.1356	-19.259	2360.1
4	3672.3	929.61	6.2911	-0.1356	-18.807	2700.9
5	1910.1	704.91	5.1593	-0.1356	-16.711	2195.0
6	-9.2482	706.24	5.5349	-0.1356	-18.006	2195.5
7	3666.4	929.27	6.2919	-0.1356	-18.809	2699.6
8	1900.4	703.80	5.1539	-0.1356	-16.698	2191.9
9	-18.416	705.12	5.5292	-0.1356	-17.992	2192.4
10	3660.5	928.93	6.2928	-0.1356	-18.811	2698.4
11	1890.6	704.41	5.1609	-0.1356	-16.714	2192.9
12	-27.585	705.73	5.5366	-0.1356	-18.009	2193.4
13	3654.6	966.86	6.5487	-0.1356	-19.358	2778.6
14	1880.9	770.98	5.6403	-0.1356	-17.830	2346.4
15	-36.753	776.14	6.0776	-0.1356	-19.267	2355.6

MINIMUM	-36.753	703.80	5.1539	-0.1356	-19.358	2191.9
Pile N.	15	8	8	1	13	8
MAXIMUM	3678.1	968.29	6.5487	-0.1356	-16.698	2783.8
Pile N.	1	1	13	1	8	1

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	COMMESSA <b>IF28</b> LOTTO <b>01</b> CODIFICA <b>E ZZ CL</b> DOCUMENTO <b>VI0403 001</b> REV. <b>B</b> FOGLIO <b>154 di 354</b>

PILE GROUP DISP. x, M DISP. y, M DISP. z, M ROT. x,RAD ROT. y,RAD ROT. z,RAD

1	2.1988E-03	4.3908E-03	2.8369E-05	-4.0687E-07	1.2424E-06	-2.4431E-04
2	1.0994E-03	4.3908E-03	3.0200E-05	-4.0687E-07	1.2424E-06	-2.4431E-04
3	-4.8743E-08	4.3908E-03	3.2030E-05	-4.0687E-07	1.2424E-06	-2.4431E-04
4	2.1932E-03	4.3889E-03	2.8369E-05	-4.0687E-07	1.2424E-06	-2.4431E-04
5	1.0938E-03	4.3889E-03	3.0200E-05	-4.0687E-07	1.2424E-06	-2.4431E-04
6	-5.6396E-06	4.3889E-03	3.2030E-05	-4.0687E-07	1.2424E-06	-2.4431E-04
7	2.1876E-03	4.3871E-03	2.8369E-05	-4.0687E-07	1.2424E-06	-2.4431E-04
8	1.0882E-03	4.3871E-03	3.0200E-05	-4.0687E-07	1.2424E-06	-2.4431E-04
9	-1.1231E-05	4.3871E-03	3.2030E-05	-4.0687E-07	1.2424E-06	-2.4431E-04
10	2.1820E-03	4.3853E-03	2.8369E-05	-4.0687E-07	1.2424E-06	-2.4431E-04
11	1.0826E-03	4.3853E-03	3.0200E-05	-4.0687E-07	1.2424E-06	-2.4431E-04
12	-1.6821E-05	4.3853E-03	3.2030E-05	-4.0687E-07	1.2424E-06	-2.4431E-04
13	2.1764E-03	4.3834E-03	2.8369E-05	-4.0687E-07	1.2424E-06	-2.4431E-04
14	1.0770E-03	4.3834E-03	3.0200E-05	-4.0687E-07	1.2424E-06	-2.4431E-04
15	-2.2412E-05	4.3834E-03	3.2030E-05	-4.0687E-07	1.2424E-06	-2.4431E-04

MINIMUM	-2.2412E-05	4.3834E-03	2.8369E-05	-4.0687E-07	1.2424E-06	-2.4431E-04
Pile N.	15	13	1	1	1	1
MAXIMUM	2.1988E-03	4.3908E-03	3.2030E-05	-4.0687E-07	1.2424E-06	-2.4431E-04
Pile N.	1	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	3678.1	968.29	6.5451	-0.1356	-19.351	2783.8
2	1919.8	772.09	5.6369	-0.1356	-17.822	2350.9
3	-0.079931	777.26	6.0739	-0.1356	-19.259	2360.1
4	3672.3	929.61	6.2911	-0.1356	-18.807	2700.9
5	1910.1	704.91	5.1593	-0.1356	-16.711	2195.0
6	-9.2482	706.24	5.5349	-0.1356	-18.006	2195.5
7	3666.4	929.27	6.2919	-0.1356	-18.809	2699.6
8	1900.4	703.80	5.1539	-0.1356	-16.698	2191.9
9	-18.416	705.12	5.5292	-0.1356	-17.992	2192.4
10	3660.5	928.93	6.2928	-0.1356	-18.811	2698.4
11	1890.6	704.41	5.1609	-0.1356	-16.714	2192.9
12	-27.585	705.73	5.5366	-0.1356	-18.009	2193.4
13	3654.6	966.86	6.5487	-0.1356	-19.358	2778.6
14	1880.9	770.98	5.6403	-0.1356	-17.830	2346.4
15	-36.753	776.14	6.0776	-0.1356	-19.267	2355.6

MINIMUM	-36.753	703.80	5.1539	-0.1356	-19.358	2191.9
Pile N.	15	8	8	1	13	8
MAXIMUM	3678.1	968.29	6.5487	-0.1356	-16.698	2783.8
Pile N.	1	1	13	1	8	1

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

1	1.0483E+04
2	8181.7
3	7123.2
4	1.0230E+04
5	7705.5
6	6631.6
7	1.0223E+04
8	7690.8
9	6627.5
10	1.0215E+04
11	7688.2
12	6635.7
13	1.0454E+04
14	8146.2
15	7130.5

MINIMUM	6627.5
Pile N.	9
MAXIMUM	1.0483E+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.  
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/M KN/M KN/M\*\*2 KN- M\*\*2 KN- M\*\*2

1	-6.7685E-05	-4.4562E-07	-2783.8	-19.351	-365.80	-2.4125	-103.96	-0.6858	2081.4	7.8279E+06	7.8279E+06
x (M)	9.9000	10.080	0.0000	0.0000	8.4600	8.4600	10.260	18.000	0.0000	0.0000	0.0000
2	-6.9346E-05	-4.8812E-07	-2350.9	-17.822	-281.38	-1.9861	-70.741	-0.5007	1086.4	7.8279E+06	7.8279E+06
x (M)	10.800	10.800	0.0000	0.0000	9.0000	9.1800	11.160	18.000	0.0000	0.0000	0.0000
3	-6.9122E-05	-5.1816E-07	-2360.1	-19.259	-282.97	-2.1257	-71.272	-0.5376	0.045232	7.8279E+06	7.8279E+06
x (M)	10.800	10.800	0.0000	0.0000	9.0000	9.1800	10.980	11.160	18.000	0.0000	0.0000
4	-6.7937E-05	-4.4661E-07	-2700.9	-18.807	-348.19	-2.2981	-96.640	-0.6377	2078.1	7.8279E+06	7.8279E+06
x (M)	10.080	10.080	0.0000	0.0000	8.4600	8.6400	10.260	10.440	18.000	0.0000	0.0000
5	-7.0396E-05	-4.9592E-07	-2195.0	-16.711	-253.15	-1.7862	-61.254	-0.4340	1080.9	7.8279E+06	7.8279E+06
x (M)	11.160	11.160	0.0000	0.0000	9.3600	9.3600	11.520	11.520	18.000	0.0000	0.0000
6	-7.0230E-05	-5.2671E-07	-2195.5	-18.006	-252.92	-1.9003	-61.225	-0.4622	5.2334	7.8279E+06	7.8279E+06



<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>												
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   													
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">COMMESSA</td> <td style="text-align: center;">LOTTO</td> <td style="text-align: center;">CODIFICA</td> <td style="text-align: center;">DOCUMENTO</td> <td style="text-align: center;">REV.</td> <td style="text-align: center;">FOGLIO</td> </tr> <tr> <td style="text-align: center;">IF28</td> <td style="text-align: center;">01</td> <td style="text-align: center;">E ZZ CL</td> <td style="text-align: center;">VI0403 001</td> <td style="text-align: center;">B</td> <td style="text-align: center;">156 di 354</td> </tr> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF28	01	E ZZ CL	VI0403 001	B	156 di 354
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO								
IF28	01	E ZZ CL	VI0403 001	B	156 di 354								

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN    HOR. LOAD Y, KN    HOR. LOAD Z, KN  
 27688.8            -23711.8            87.4731

MOMENT X, KN- M    MOMENT Y, KN- M    MOMENT Z, KN- M  
 -10.4995            840.585            66338.1

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL, M    HORIZONTAL Y, M    HORIZONTAL Z, M  
 1.22958E-03    -0.0113105            3.98812E-05

ANGLE ROT. X,RAD    ANGLE ROT. Y,RAD    ANGLE ROT. Z,RAD  
 2.21943E-07    1.28263E-06            4.87114E-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

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
1	-9.5089E-04	-0.011312	4.0880E-05	2.2194E-07	1.2826E-06	4.8711E-04
2	1.2411E-03	-0.011312	3.9881E-05	2.2194E-07	1.2826E-06	4.8711E-04
3	3.4331E-03	-0.011312	3.8882E-05	2.2194E-07	1.2826E-06	4.8711E-04
4	-9.5666E-04	-0.011312	4.0880E-05	2.2194E-07	1.2826E-06	4.8711E-04
5	1.2354E-03	-0.011312	3.9881E-05	2.2194E-07	1.2826E-06	4.8711E-04
6	3.4274E-03	-0.011312	3.8882E-05	2.2194E-07	1.2826E-06	4.8711E-04
7	-9.6244E-04	-0.011310	4.0880E-05	2.2194E-07	1.2826E-06	4.8711E-04
8	1.2296E-03	-0.011310	3.9881E-05	2.2194E-07	1.2826E-06	4.8711E-04
9	3.4216E-03	-0.011310	3.8882E-05	2.2194E-07	1.2826E-06	4.8711E-04
10	-9.6821E-04	-0.011310	4.0880E-05	2.2194E-07	1.2826E-06	4.8711E-04
11	1.2238E-03	-0.011310	3.9881E-05	2.2194E-07	1.2826E-06	4.8711E-04
12	3.4158E-03	-0.011310	3.8882E-05	2.2194E-07	1.2826E-06	4.8711E-04
13	-9.7398E-04	-0.011309	4.0880E-05	2.2194E-07	1.2826E-06	4.8711E-04
14	1.2180E-03	-0.011309	3.9881E-05	2.2194E-07	1.2826E-06	4.8711E-04
15	3.4100E-03	-0.011309	3.8882E-05	2.2194E-07	1.2826E-06	4.8711E-04

MINIMUM    -9.7398E-04    -0.011312    3.8882E-05    2.2194E-07    1.2826E-06    4.8711E-04  
 Pile N.    13            1            3            1            1            1  
 MAXIMUM    3.4331E-03    -0.011309    4.0880E-05    2.2194E-07    1.2826E-06    4.8711E-04  
 Pile N.    3            13            1            1            1            1

\* PILE TOP REACTIONS \*

PILE GROUP    FOR. X, KN    FOR. Y, KN    FOR. Z, KN    MOM X, KN- M    MOM Y, KN- M    MOM Z, KN- M

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
1	-1552.5	-1529.4	5.8185	0.073973	-20.593	-5247.3
2	2166.1	-1516.5	5.6110	0.073973	-19.907	-5227.0
3	4975.2	-1907.6	6.8335	0.073973	-22.754	-6201.5
4	-1561.9	-1388.9	5.2940	0.073973	-19.231	-4883.9
5	2156.0	-1383.8	5.1286	0.073973	-18.653	-4883.0
6	4969.1	-1830.7	6.5623	0.073973	-22.103	-6017.1
7	-1571.3	-1387.2	5.2879	0.073973	-19.215	-4879.0
8	2146.0	-1382.1	5.1226	0.073973	-18.637	-4878.1
9	4963.0	-1830.5	6.5626	0.073973	-22.104	-6016.6
10	-1580.7	-1388.8	5.2945	0.073973	-19.232	-4883.0
11	2136.0	-1383.7	5.1290	0.073973	-18.653	-4882.1
12	4957.0	-1830.4	6.5628	0.073973	-22.104	-6016.0
13	-1590.1	-1529.0	5.8194	0.073973	-20.595	-5245.3
14	2125.9	-1516.1	5.6119	0.073973	-19.909	-5225.1
15	4950.9	-1907.1	6.8344	0.073973	-22.756	-6199.2

MINIMUM    -1590.1    -1907.6    5.1226    0.073973    -22.756    -6201.5  
 Pile N.    13            3            8            1            15            3  
 MAXIMUM    4975.2    -1382.1    6.8344    0.073973    -18.637    -4878.1  
 Pile N.    3            8            15            1            8            8

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP    DISP. x, M    DISP. y, M    DISP. z, M    ROT. x,RAD    ROT. y,RAD    ROT. z,RAD

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
1	-9.5089E-04	-0.011312	4.0880E-05	2.2194E-07	1.2826E-06	4.8711E-04
2	1.2411E-03	-0.011312	3.9881E-05	2.2194E-07	1.2826E-06	4.8711E-04
3	3.4331E-03	-0.011312	3.8882E-05	2.2194E-07	1.2826E-06	4.8711E-04
4	-9.5666E-04	-0.011312	4.0880E-05	2.2194E-07	1.2826E-06	4.8711E-04

<b>APPALTATORE:</b> Consorzio <span style="margin-left: 100px;">Soci</span>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <span style="margin-left: 100px;">Mandanti</span>   	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	
COMMESSA <b>IF28</b> LOTTO <b>01</b> CODIFICA <b>E ZZ CL</b> DOCUMENTO <b>VI0403 001</b> REV. <b>B</b> FOGLIO <b>157 di 354</b>	

5	1.2354E-03	-0.011312	3.9881E-05	2.2194E-07	1.2826E-06	4.8711E-04
6	3.4274E-03	-0.011312	3.8882E-05	2.2194E-07	1.2826E-06	4.8711E-04
7	-9.6244E-04	-0.011310	4.0880E-05	2.2194E-07	1.2826E-06	4.8711E-04
8	1.2296E-03	-0.011310	3.9881E-05	2.2194E-07	1.2826E-06	4.8711E-04
9	3.4216E-03	-0.011310	3.8882E-05	2.2194E-07	1.2826E-06	4.8711E-04
10	-9.6821E-04	-0.011310	4.0880E-05	2.2194E-07	1.2826E-06	4.8711E-04
11	1.2238E-03	-0.011310	3.9881E-05	2.2194E-07	1.2826E-06	4.8711E-04
12	3.4158E-03	-0.011310	3.8882E-05	2.2194E-07	1.2826E-06	4.8711E-04
13	-9.7398E-04	-0.011309	4.0880E-05	2.2194E-07	1.2826E-06	4.8711E-04
14	1.2180E-03	-0.011309	3.9881E-05	2.2194E-07	1.2826E-06	4.8711E-04
15	3.4100E-03	-0.011309	3.8882E-05	2.2194E-07	1.2826E-06	4.8711E-04

MINIMUM	-9.7398E-04	-0.011312	3.8882E-05	2.2194E-07	1.2826E-06	4.8711E-04
Pile N.	13	1	3	1	1	1
MAXIMUM	3.4331E-03	-0.011309	4.0880E-05	2.2194E-07	1.2826E-06	4.8711E-04
Pile N.	3	13	1	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP AXIAL, KN LAT. y, KN LAT. z, KN MOM x, KN- M MOM y, KN- M MOM z, KN- M

1	-1552.5	-1529.4	5.8185	0.073973	-20.593	-5247.3
2	2166.1	-1516.5	5.6110	0.073973	-19.907	-5227.0
3	4975.2	-1907.6	6.8335	0.073973	-22.754	-6201.5
4	-1561.9	-1388.9	5.2940	0.073973	-19.231	-4883.9
5	2156.0	-1383.8	5.1286	0.073973	-18.653	-4883.0
6	4969.1	-1830.7	6.5623	0.073973	-22.103	-6017.1
7	-1571.3	-1387.2	5.2879	0.073973	-19.215	-4879.0
8	2146.0	-1382.1	5.1226	0.073973	-18.637	-4878.1
9	4963.0	-1830.5	6.5626	0.073973	-22.104	-6016.6
10	-1580.7	-1388.8	5.2945	0.073973	-19.232	-4883.0
11	2136.0	-1383.7	5.1290	0.073973	-18.653	-4882.1
12	4957.0	-1830.4	6.5628	0.073973	-22.104	-6016.0
13	-1590.1	-1529.0	5.8194	0.073973	-20.595	-5245.3
14	2125.9	-1516.1	5.6119	0.073973	-19.909	-5225.1
15	4950.9	-1907.1	6.8344	0.073973	-22.756	-6199.2

MINIMUM	-1590.1	-1907.6	5.1226	0.073973	-22.756	-6201.5
Pile N.	13	3	8	1	15	3
MAXIMUM	4975.2	-1382.1	6.8344	0.073973	-18.637	-4878.1
Pile N.	3	8	15	1	8	8

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







1	1.6715E+04
2	1.7001E+04
3	2.1532E+04
4	1.5624E+04
5	1.5957E+04
6	2.0972E+04
7	1.5614E+04
8	1.5937E+04
9	2.0967E+04
10	1.5632E+04
11	1.5943E+04
12	2.0962E+04
13	1.6731E+04
14	1.6973E+04
15	2.1511E+04

MINIMUM	1.5614E+04
Pile N.	7
MAXIMUM	2.1532E+04
Pile N.	3

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	MOMENT x-DIR	SHEAR z-DIR	SHEAR y-DIR	SOIL REACT z-DIR	SOIL REACT y-DIR	TOTAL FLEX. RIG.	RIG. FLEX. RIG.
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2	KN- M**2	KN- M**2
1	-0.011312	-6.4945E-07	-2285.1	-20.593	-1529.3	-1.9306	-497.99	-0.4463	878.53	7.8279E+06	7.8279E+06
x(M)	0.0000	12.060	7.2000	0.0000	0.0000	10.260	4.1400	14.040	18.000	0.0000	0.0000
2	-0.011312	-6.3691E-07	-2278.6	-19.907	-1516.7	-1.8755	-493.60	-0.4338	1225.7	7.8279E+06	7.8279E+06
x(M)	0.0000	12.060	7.2000	0.0000	0.0000	10.260	4.1400	14.040	18.000	0.0000	0.0000
3	-0.011312	-5.8717E-07	-2732.1	-22.754	-1908.0	-2.3630	-714.21	-0.5815	2815.4	7.8279E+06	7.8279E+06
x(M)	0.0000	11.160	6.6600	0.0000	0.0000	9.5400	4.1400	11.340	18.000	0.0000	0.0000
4	-0.011311	-6.7048E-07	-2122.4	-19.231	-1388.9	-1.7314	-427.16	-0.4182	883.85	7.8279E+06	7.8279E+06
x(M)	0.0000	12.600	7.3800	0.0000	0.0000	10.620	4.1400	14.040	18.000	0.0000	0.0000
5	-0.011311	-6.5643E-07	-2124.6	-18.653	-1384.0	-1.6900	-426.76	-0.4076	1220.1	7.8279E+06	7.8279E+06
x(M)	0.0000	12.600	7.3800	0.0000	0.0000	10.620	4.1400	14.040	18.000	0.0000	0.0000
6	-0.011311	-5.9606E-07	-2644.3	-22.103	-1831.0	-2.2588	-668.45	-0.5440	2811.9	7.8279E+06	7.8279E+06
x(M)	0.0000	11.340	6.8400	0.0000	0.0000	9.5400	4.1400	11.520	18.000	0.0000	0.0000
7	-0.011310	-6.7107E-07	-2120.3	-19.215	-1387.1	-1.7295	-426.30	-0.4178	889.17	7.8279E+06	7.8279E+06
x(M)	0.0000	12.600	7.3800	0.0000	0.0000	10.620	4.1400	14.040	18.000	0.0000	0.0000
8	-0.011310	-6.5696E-07	-2122.4	-18.637	-1382.2	-1.6881	-425.90	-0.4072	1214.4	7.8279E+06	7.8279E+06
x(M)	0.0000	12.600	7.3800	0.0000	0.0000	10.620	4.1400	14.040	18.000	0.0000	0.0000
9	-0.011310	-5.9606E-07	-2644.1	-22.104	-1830.9	-2.2588	-668.43	-0.5440	2808.5	7.8279E+06	7.8279E+06

<b>APPALTATORE:</b> Consorzio <span style="float: right;">Soci</span>   		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <span style="float: right;">Mandanti</span>   		
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>		

x (M)	0.0000	11.340	6.8400	0.0000	0.0000	9.5400	4.1400	11.520	18.000	0.0000	0.0000
10	-0.011309	-6.7044E-07	-2122.1	-19.232	-1388.7	-1.7315	-427.12	-0.4182	894.49	7.8279E+06	7.8279E+06
x (M)	0.0000	12.600	7.3800	0.0000	0.0000	10.620	4.1400	14.040	18.000	0.0000	0.0000
11	-0.011309	-6.5640E-07	-2124.3	-18.653	-1383.8	-1.6901	-426.72	-0.4076	1208.7	7.8279E+06	7.8279E+06
x (M)	0.0000	12.600	7.3800	0.0000	0.0000	10.620	4.1400	14.040	18.000	0.0000	0.0000
12	-0.011309	-5.9605E-07	-2643.9	-22.104	-1830.8	-2.2589	-668.40	-0.5440	2805.1	7.8279E+06	7.8279E+06
x (M)	0.0000	11.340	6.8400	0.0000	0.0000	9.5400	4.1400	11.520	18.000	0.0000	0.0000
13	-0.011308	-6.4941E-07	-2284.4	-20.595	-1528.9	-1.9308	-497.91	-0.4463	899.80	7.8279E+06	7.8279E+06
x (M)	0.0000	12.060	7.2000	0.0000	0.0000	10.260	4.1400	14.040	18.000	0.0000	0.0000
14	-0.011308	-6.3687E-07	-2278.0	-19.909	-1516.3	-1.8756	-493.52	-0.4338	1203.0	7.8279E+06	7.8279E+06
x (M)	0.0000	12.060	7.2000	0.0000	0.0000	10.260	4.1400	14.040	18.000	0.0000	0.0000
15	-0.011308	-5.8714E-07	-2731.3	-22.756	-1907.5	-2.3632	-714.09	-0.5816	2801.6	7.8279E+06	7.8279E+06
x (M)	0.0000	11.160	6.6600	0.0000	0.0000	9.5400	4.1400	11.340	18.000	0.0000	0.0000
Min.	-0.011312	-6.7107E-07	-2732.1	-22.756	-1908.0	-2.3632	-714.21	-0.5816	878.53	7.8279E+06	7.8279E+06
Pile N.	1	7	3	15	3	15	3	15	1	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL.		MOMENT		SHEAR		SOIL REACT		TOTAL FLEX. RIG.		
	y-Dir	z-Dir	y-Dir	z-Dir	y-Dir	z-Dir	KN/M**2	KN-M**2	KN-M**2	KN-M**2	
1	1.7573E-04	4.0880E-05	5247.3	8.3642	521.23	5.8182	118.86	1.8537	1.6715E+04	7.8279E+06	7.8279E+06
x (M)	12.060	0.0000	0.0000	7.2000	10.260	0.0000	14.040	4.1400	0.0000	0.0000	0.0000
2	1.7694E-04	3.9881E-05	5227.0	8.1288	519.95	5.6115	118.72	1.7890	1.7001E+04	7.8279E+06	7.8279E+06
x (M)	12.060	0.0000	0.0000	7.2000	10.260	0.0000	14.040	4.1400	0.0000	0.0000	0.0000
3	1.6784E-04	3.8882E-05	6201.5	9.4908	674.97	6.8348	165.88	2.5165	2.1532E+04	7.8279E+06	7.8279E+06
x (M)	11.160	0.0000	0.0000	6.6600	9.3600	0.0000	11.340	4.1400	0.0000	0.0000	0.0000
4	1.8107E-04	4.0880E-05	4883.9	7.7742	467.78	5.2937	111.57	1.5908	1.5624E+04	7.8279E+06	7.8279E+06
x (M)	12.420	0.0000	0.0000	7.5600	10.440	0.0000	14.040	4.1400	0.0000	0.0000	0.0000
5	1.8208E-04	3.9881E-05	4883.0	7.5846	469.17	5.1291	111.72	1.5474	1.5957E+04	7.8279E+06	7.8279E+06
x (M)	12.420	0.0000	0.0000	7.5600	10.440	0.0000	14.040	4.1400	0.0000	0.0000	0.0000
6	1.7025E-04	3.8882E-05	6017.1	9.1951	645.62	6.5636	155.06	2.3558	2.0972E+04	7.8279E+06	7.8279E+06
x (M)	11.340	0.0000	0.0000	6.8400	9.5400	0.0000	11.520	4.1400	0.0000	0.0000	0.0000
7	1.8117E-04	4.0880E-05	4879.0	7.7674	467.07	5.2876	111.45	1.5878	1.5614E+04	7.8279E+06	7.8279E+06
x (M)	12.420	0.0000	0.0000	7.5600	10.440	0.0000	14.040	4.1400	0.0000	0.0000	0.0000
8	1.8217E-04	3.9881E-05	4878.1	7.5780	468.46	5.1231	111.60	1.5445	1.5937E+04	7.8279E+06	7.8279E+06
x (M)	12.420	0.0000	0.0000	7.5600	10.440	0.0000	14.040	4.1400	0.0000	0.0000	0.0000
9	1.7023E-04	3.8882E-05	6016.6	9.1953	645.58	6.5638	155.05	2.3560	2.0967E+04	7.8279E+06	7.8279E+06
x (M)	11.340	0.0000	0.0000	6.8400	9.5400	0.0000	11.520	4.1400	0.0000	0.0000	0.0000
10	1.8103E-04	4.0880E-05	4883.0	7.7745	467.71	5.2941	111.55	1.5910	1.5632E+04	7.8279E+06	7.8279E+06
x (M)	12.420	0.0000	0.0000	7.5600	10.440	0.0000	14.040	4.1400	0.0000	0.0000	0.0000
11	1.8204E-04	3.9881E-05	4882.1	7.5849	469.10	5.1295	111.70	1.5476	1.5943E+04	7.8279E+06	7.8279E+06
x (M)	12.420	0.0000	0.0000	7.5600	10.440	0.0000	14.040	4.1400	0.0000	0.0000	0.0000
12	1.7021E-04	3.8882E-05	6016.0	9.1955	645.54	6.5641	155.05	2.3561	2.0962E+04	7.8279E+06	7.8279E+06
x (M)	11.340	0.0000	0.0000	6.8400	9.5400	0.0000	11.520	4.1400	0.0000	0.0000	0.0000
13	1.7565E-04	4.0880E-05	5245.3	8.3649	521.07	5.8191	118.82	1.8541	1.6731E+04	7.8279E+06	7.8279E+06
x (M)	12.060	0.0000	0.0000	7.2000	10.260	0.0000	14.040	4.1400	0.0000	0.0000	0.0000
14	1.7686E-04	3.9881E-05	5225.1	8.1294	519.79	5.6124	118.67	1.7894	1.6973E+04	7.8279E+06	7.8279E+06
x (M)	12.060	0.0000	0.0000	7.2000	10.260	0.0000	14.040	4.1400	0.0000	0.0000	0.0000
15	1.6777E-04	3.8882E-05	6199.2	9.4916	674.80	6.8357	165.84	2.5171	2.1511E+04	7.8279E+06	7.8279E+06
x (M)	11.160	0.0000	0.0000	6.6600	9.3600	0.0000	11.340	4.1400	0.0000	0.0000	0.0000
Max.	1.8217E-04	4.0880E-05	6201.5	9.4916	674.97	6.8357	165.88	2.5171	2.1532E+04	7.8279E+06	7.8279E+06
Pile N.	8	1	3	15	3	15	3	15	3	1	1







LOAD CASE : 15  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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	0.5012	1.0000
3	0.6023	1.0000
4	0.5420	1.0000
5	0.4643	1.0000
6	0.5609	1.0000
7	0.5420	1.0000
8	0.4642	1.0000
9	0.5609	1.0000
10	0.5751	1.0000
11	0.4961	1.0000
12	0.5929	1.0000
13	0.8538	1.0000
14	0.7952	1.0000
15	0.8661	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

<b>APPALTATORE:</b> Consorzio  Soci  	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>												
<b>PROGETTAZIONE:</b> Mandataria  Mandanti  													
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	<table border="1"> <tr> <td>COMMESSA</td> <td>LOTTO</td> <td>CODIFICA</td> <td>DOCUMENTO</td> <td>REV.</td> <td>FOGLIO</td> </tr> <tr> <td>IF28</td> <td>01</td> <td>E ZZ CL</td> <td>VI0403 001</td> <td>B</td> <td>159 di 354</td> </tr> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF28	01	E ZZ CL	VI0403 001	B	159 di 354
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO								
IF28	01	E ZZ CL	VI0403 001	B	159 di 354								

VERT. LOAD, KN    HOR. LOAD Y, KN    HOR. LOAD Z, KN  
 27688.8            -3499.85            -15401.8

MOMENT X, KN- M    MOMENT Y, KN- M    MOMENT Z, KN- M  
 -5909.51            -53198.5            776.794

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL, M    HORIZONTAL Y, M    HORIZONTAL Z, M  
 1.06166E-03    -1.30068E-03    -5.56964E-03

ANGLE ROT. X,RAD    ANGLE ROT. Y,RAD    ANGLE ROT. Z,RAD  
 -3.01267E-05    -1.01061E-04    3.66925E-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	-1.3002E-05	-1.0295E-03	-5.7052E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
2	1.5211E-04	-1.0295E-03	-5.5696E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
3	3.1723E-04	-1.0295E-03	-5.4341E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
4	4.4177E-04	-1.1651E-03	-5.7052E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
5	6.0689E-04	-1.1651E-03	-5.5696E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
6	7.7200E-04	-1.1651E-03	-5.4341E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
7	8.9655E-04	-1.3007E-03	-5.7052E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
8	1.0617E-03	-1.3007E-03	-5.5696E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
9	1.2268E-03	-1.3007E-03	-5.4341E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
10	1.3513E-03	-1.4363E-03	-5.7052E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
11	1.5164E-03	-1.4363E-03	-5.5696E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
12	1.6815E-03	-1.4363E-03	-5.4341E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
13	1.8061E-03	-1.5718E-03	-5.7052E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
14	1.9712E-03	-1.5718E-03	-5.5696E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
15	2.1363E-03	-1.5718E-03	-5.4341E-03	-3.0127E-05	-1.0106E-04	3.6693E-05

MINIMUM    -1.3002E-05    -1.5718E-03    -5.7052E-03    -3.0127E-05    -1.0106E-04    3.6693E-05  
 Pile N.    1    13    1    1    1    1

MAXIMUM    2.1363E-03    -1.0295E-03    -5.4341E-03    -3.0127E-05    -1.0106E-04    3.6693E-05  
 Pile N.    15    1    3    1    1    1

\* PILE TOP REACTIONS \*

PILE GROUP    FOR. X, KN    FOR. Y, KN    FOR. Z, KN    MOM X, KN- M    MOM Y, KN- M    MOM Z, KN- M

1	-21.322	-176.02	-1046.4	-10.041	3592.6	-581.13
2	268.04	-160.66	-932.72	-10.041	3278.4	-542.57
3	558.99	-181.79	-1025.1	-10.041	3480.4	-594.83
4	777.32	-191.61	-990.78	-10.041	3451.2	-647.58
5	1064.2	-176.67	-891.65	-10.041	3177.7	-610.81
6	1351.0	-200.49	-983.41	-10.041	3381.4	-670.52
7	1567.4	-216.29	-988.68	-10.041	3447.4	-737.32
8	1854.3	-199.48	-889.65	-10.041	3174.0	-695.87
9	2141.1	-226.26	-981.26	-10.041	3377.6	-763.14
10	2357.5	-249.03	-1019.7	-10.041	3524.2	-846.69
11	2644.4	-230.71	-921.39	-10.041	3254.4	-801.93
12	2931.2	-259.81	-1009.5	-10.041	3447.0	-874.52
13	3147.6	-344.71	-1276.7	-10.041	4132.9	-1104.1
14	3434.5	-333.91	-1205.7	-10.041	3937.7	-1079.8
15	3612.5	-352.40	-1239.1	-10.041	3977.2	-1121.1

MINIMUM    -21.322    -352.40    -1276.7    -10.041    3174.0    -1121.1  
 Pile N.    1    15    13    1    8    15



MAXIMUM    3612.5    -160.66    -889.65    -10.041    4132.9    -542.57  
 Pile N.    15    2    8    1    13    2

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	-1.3002E-05	-1.0295E-03	-5.7052E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
2	1.5211E-04	-1.0295E-03	-5.5696E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
3	3.1723E-04	-1.0295E-03	-5.4341E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
4	4.4177E-04	-1.1651E-03	-5.7052E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
5	6.0689E-04	-1.1651E-03	-5.5696E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
6	7.7200E-04	-1.1651E-03	-5.4341E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
7	8.9655E-04	-1.3007E-03	-5.7052E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
8	1.0617E-03	-1.3007E-03	-5.5696E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
9	1.2268E-03	-1.3007E-03	-5.4341E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
10	1.3513E-03	-1.4363E-03	-5.7052E-03	-3.0127E-05	-1.0106E-04	3.6693E-05

<b>APPALTATORE:</b> Consorzio  Soci  		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria  Mandanti  							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>							

11	1.5164E-03	-1.4363E-03	-5.5696E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
12	1.6815E-03	-1.4363E-03	-5.4341E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
13	1.8061E-03	-1.5718E-03	-5.7052E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
14	1.9712E-03	-1.5718E-03	-5.5696E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
15	2.1363E-03	-1.5718E-03	-5.4341E-03	-3.0127E-05	-1.0106E-04	3.6693E-05

MINIMUM	-1.3002E-05	-1.5718E-03	-5.7052E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
Pile N.	1	13	1	1	1	1
MAXIMUM	2.1363E-03	-1.0295E-03	-5.4341E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
Pile N.	15	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP AXIAL, KN LAT. y, KN LAT. z, KN MOM x, KN- M MOM y, KN- M MOM z, KN- M

1	-21.322	-176.02	-1046.4	-10.041	3592.6	-581.13
2	268.04	-160.66	-932.72	-10.041	3278.4	-542.57
3	558.99	-181.79	-1025.1	-10.041	3480.4	-594.83
4	777.32	-191.61	-990.78	-10.041	3451.2	-647.58
5	1064.2	-176.67	-891.65	-10.041	3177.7	-610.81
6	1351.0	-200.49	-983.41	-10.041	3381.4	-670.52
7	1567.4	-216.29	-988.68	-10.041	3447.4	-737.32
8	1854.3	-199.48	-889.65	-10.041	3174.0	-695.87
9	2141.1	-226.26	-981.26	-10.041	3377.6	-763.14
10	2357.5	-249.03	-1019.7	-10.041	3524.2	-846.69
11	2644.4	-230.71	-921.39	-10.041	3254.4	-801.93
12	2931.2	-259.81	-1009.5	-10.041	3447.0	-874.52
13	3147.6	-344.71	-1276.7	-10.041	4132.9	-1104.1
14	3434.5	-333.91	-1205.7	-10.041	3937.7	-1079.8
15	3612.5	-352.40	-1239.1	-10.041	3977.2	-1121.1

MINIMUM	-21.322	-352.40	-1276.7	-10.041	3174.0	-1121.1
Pile N.	1	15	13	1	8	15
MAXIMUM	3612.5	-160.66	-889.65	-10.041	4132.9	-542.57
Pile N.	15	2	8	1	13	2

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

1	1.0996E+04
2	1.0181E+04
3	1.0973E+04
4	1.1037E+04
5	1.0368E+04
6	1.1169E+04
7	1.1527E+04
8	1.0856E+04
9	1.1662E+04
10	1.2273E+04
11	1.1612E+04
12	1.2391E+04
13	1.4692E+04
14	1.4266E+04
15	1.4515E+04

MINIMUM	1.0181E+04
Pile N.	2
MAXIMUM	1.4692E+04
Pile N.	13

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR z-DIR	SHEAR y-DIR	SOIL REACT z-DIR	SOIL REACT y-DIR	TOTAL STRESS	FLEX. RIG.	FLEX. RIG.
	M	M	KN- M	KN- M	KN	KN/ M	KN/ M	KN/ M**2	KN- M**2	KN- M**2	KN- M**2
x (M)	-1.0295E-03	-5.7052E-03	-243.36	-1376.6	-176.02	-1046.4	-62.441	-361.28	12.066	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	6.8400	6.8400	0.0000	0.0000	4.1400	4.1400	18.000	0.0000	0.0000
2	-1.0295E-03	-5.5696E-03	-224.17	-1236.2	-160.66	-932.73	-54.745	-309.11	151.68	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	7.0200	7.2000	0.0000	0.0000	4.1400	4.1400	18.000	0.0000	0.0000
3	-1.0295E-03	-5.4341E-03	-249.42	-1343.5	-181.79	-1025.2	-65.493	-360.11	316.32	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	6.6600	6.8400	0.0000	0.0000	4.1400	4.1400	18.000	0.0000	0.0000
4	-1.1651E-03	-5.7052E-03	-262.21	-1304.7	-191.62	-990.81	-66.264	-335.48	439.87	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	7.0200	7.0200	0.0000	0.0000	4.1400	4.1400	18.000	0.0000	0.0000
5	-1.1651E-03	-5.5696E-03	-245.94	-1194.0	-176.68	-891.69	-58.346	-288.18	602.20	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	7.2000	7.2000	0.0000	0.0000	4.1400	4.1400	18.000	0.0000	0.0000
6	-1.1651E-03	-5.4341E-03	-274.54	-1299.5	-200.50	-983.46	-70.179	-337.61	764.53	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	6.8400	7.0200	0.0000	0.0000	4.1400	4.1400	18.000	0.0000	0.0000
7	-1.3007E-03	-5.7052E-03	-293.59	-1303.5	-216.30	-988.75	-74.400	-334.71	886.97	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	7.0200	7.0200	0.0000	0.0000	4.1400	4.1400	18.000	0.0000	0.0000
8	-1.3007E-03	-5.5696E-03	-275.35	-1192.9	-199.49	-889.72	-65.505	-287.47	1049.3	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	7.2000	7.2000	0.0000	0.0000	4.1400	4.1400	18.000	0.0000	0.0000
9	-1.3007E-03	-5.4341E-03	-307.32	-1298.3	-226.28	-981.34	-78.780	-336.79	1211.6	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	6.8400	7.0200	0.0000	0.0000	4.1400	4.1400	18.000	0.0000	0.0000
10	-1.4363E-03	-5.7052E-03	-333.62	-1337.0	-249.06	-1019.8	-86.923	-351.82	1334.1	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	6.8400	7.0200	0.0000	0.0000	4.1400	4.1400	18.000	0.0000	0.0000
11	-1.4363E-03	-5.5696E-03	-313.81	-1227.4	-230.74	-921.49	-77.049	-304.19	1496.4	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	7.0200	7.2000	0.0000	0.0000	4.1400	4.1400	18.000	0.0000	0.0000
12	-1.4363E-03	-5.4341E-03	-348.62	-1329.9	-259.84	-1009.7	-91.673	-352.62	1658.7	7.8279E+06	7.8279E+06



<b>APPALTATORE:</b> Consorzio  Soci  	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria  Mandanti  	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	

x (M)	0.0000	0.0000	6.8400	6.8400	0.0000	0.0000	4.1400	4.1400	18.000	0.0000	0.0000
13	-1.5718E-03	-5.7052E-03	-443.55	-1620.8	-344.75	-1276.8	-135.29	-497.48	1781.2	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	6.4800	6.4800	0.0000	0.0000	4.1400	4.1400	18.000	0.0000	0.0000
14	-1.5718E-03	-5.5696E-03	-432.35	-1541.1	-333.95	-1205.8	-128.50	-460.85	1943.5	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	6.4800	6.4800	0.0000	0.0000	4.1400	4.1400	18.000	0.0000	0.0000
15	-1.5718E-03	-5.4341E-03	-450.87	-1567.7	-352.44	-1239.2	-139.72	-488.34	2044.3	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	6.3000	6.4800	0.0000	0.0000	4.1400	4.1400	18.000	0.0000	0.0000

Min.	-1.5718E-03	-5.7052E-03	-450.87	-1620.8	-352.44	-1276.8	-139.72	-497.48	12.066	7.8279E+06	7.8279E+06
Pile N.	13	1	15	13	15	13	1	1	1	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL.		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	z-Dir	y-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	KN- M**2			
1	1.6178E-05	9.2360E-05	581.13	3592.6	59.568	340.66	14.379	82.606	1.0996E+04	7.8279E+06	7.8279E+06				
x (M)	11.340	11.340	0.0000	0.0000	9.5400	9.5400	11.700	11.700	0.0000	0.0000	0.0000				
2	1.5433E-05	8.6301E-05	542.57	3278.4	52.535	292.81	12.221	68.395	1.0181E+04	7.8279E+06	7.8279E+06				
x (M)	11.880	11.880	0.0000	0.0000	9.9000	10.080	11.880	12.060	0.0000	0.0000	0.0000				
3	1.6261E-05	8.8236E-05	594.83	3480.4	62.046	337.71	15.210	83.037	1.0973E+04	7.8279E+06	7.8279E+06				
x (M)	11.160	11.160	0.0000	0.0000	9.3600	9.5400	11.520	11.520	0.0000	0.0000	0.0000				
4	1.7432E-05	8.7538E-05	647.58	3451.2	62.400	313.41	14.783	74.356	1.1037E+04	7.8279E+06	7.8279E+06				
x (M)	11.700	11.700	0.0000	0.0000	9.9000	9.9000	11.700	11.880	0.0000	0.0000	0.0000				
5	1.7874E-05	8.7663E-05	610.81	3177.7	56.992	278.90	12.977	63.729	1.0368E+04	7.8279E+06	7.8279E+06				
x (M)	12.060	12.060	0.0000	0.0000	10.080	10.080	12.060	12.240	0.0000	0.0000	0.0000				
6	1.8527E-05	8.8218E-05	670.52	3381.4	67.050	319.66	16.139	77.208	1.1169E+04	7.8279E+06	7.8279E+06				
x (M)	11.340	11.340	0.0000	0.0000	9.5400	9.5400	11.700	11.700	0.0000	0.0000	0.0000				
7	1.9605E-05	8.7655E-05	737.32	3447.4	70.025	313.12	16.572	74.224	1.1527E+04	7.8279E+06	7.8279E+06				
x (M)	11.700	11.700	0.0000	0.0000	9.9000	9.9000	11.700	11.880	0.0000	0.0000	0.0000				
8	2.0111E-05	8.7789E-05	695.87	3174.0	63.916	278.54	14.549	63.605	1.0856E+04	7.8279E+06	7.8279E+06				
x (M)	12.060	12.060	0.0000	0.0000	10.080	10.080	12.060	12.240	0.0000	0.0000	0.0000				
9	2.0814E-05	8.8305E-05	763.14	3377.6	75.183	319.27	18.098	77.050	1.1662E+04	7.8279E+06	7.8279E+06				
x (M)	11.340	11.340	0.0000	0.0000	9.5400	9.7200	11.700	11.700	0.0000	0.0000	0.0000				
10	2.1591E-05	8.6949E-05	846.69	3524.2	80.737	324.97	19.404	78.258	1.2273E+04	7.8279E+06	7.8279E+06				
x (M)	11.520	11.520	0.0000	0.0000	9.7200	9.7200	11.700	11.700	0.0000	0.0000	0.0000				
11	2.2079E-05	8.6794E-05	801.93	3254.4	73.796	290.26	17.123	67.406	1.1612E+04	7.8279E+06	7.8279E+06				
x (M)	11.880	11.880	0.0000	0.0000	10.080	10.080	12.060	12.060	0.0000	0.0000	0.0000				
12	2.3066E-05	8.8328E-05	874.52	3447.0	86.706	332.26	21.135	81.115	1.2391E+04	7.8279E+06	7.8279E+06				
x (M)	11.340	11.340	0.0000	0.0000	9.5400	9.5400	11.700	11.700	0.0000	0.0000	0.0000				
13	2.4716E-05	9.0546E-05	1104.1	4132.9	119.79	439.15	31.858	116.85	1.4692E+04	7.8279E+06	7.8279E+06				
x (M)	10.440	10.620	0.0000	0.0000	8.8200	8.8200	10.800	10.800	0.0000	0.0000	0.0000				
14	2.4915E-05	8.9033E-05	1079.8	3937.7	115.75	413.94	30.211	108.14	1.4266E+04	7.8279E+06	7.8279E+06				
x (M)	10.620	10.620	0.0000	0.0000	9.0000	9.0000	10.980	10.980	0.0000	0.0000	0.0000				
15	2.4827E-05	8.6489E-05	1121.1	3977.2	123.26	429.69	33.085	115.35	1.4515E+04	7.8279E+06	7.8279E+06				
x (M)	10.440	10.440	0.0000	0.0000	8.8200	8.8200	10.620	10.620	0.0000	0.0000	0.0000				
Max.	2.4915E-05	9.2360E-05	1121.1	4132.9	123.26	439.15	33.085	116.85	1.4692E+04	7.8279E+06	7.8279E+06				
Pile N.	14	1	15	13	15	13	13	13	1	1	1				

LOAD CASE : 16  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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	0.8541	1.0000
2	0.7954	1.0000
3	0.8661	1.0000
4	0.5751	1.0000
5	0.4961	1.0000
6	0.5926	1.0000
7	0.5420	1.0000
8	0.4642	1.0000
9	0.5606	1.0000
10	0.5421	1.0000
11	0.4642	1.0000
12	0.5606	1.0000
13	0.5845	1.0000
14	0.5011	1.0000
15	0.6020	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN    HOR. LOAD Y, KN    HOR. LOAD Z, KN  
27688.8            -3499.85            15576.7

MOMENT X, KN- M    MOMENT Y, KN- M    MOMENT Z, KN- M

<b>APPALTATORE:</b> Consorzio <span style="margin-left: 100px;">Soci</span>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>												
<b>PROGETTAZIONE:</b> Mandataria <span style="margin-left: 100px;">Mandanti</span>   													
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">COMMESSA</td> <td style="width: 10%;">LOTTO</td> <td style="width: 15%;">CODIFICA</td> <td style="width: 15%;">DOCUMENTO</td> <td style="width: 10%;">REV.</td> <td style="width: 10%;">FOGLIO</td> </tr> <tr> <td style="text-align: center;">IF28</td> <td style="text-align: center;">01</td> <td style="text-align: center;">E ZZ CL</td> <td style="text-align: center;">VI0403 001</td> <td style="text-align: center;">B</td> <td style="text-align: center;">162 di 354</td> </tr> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF28	01	E ZZ CL	VI0403 001	B	162 di 354
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO								
IF28	01	E ZZ CL	VI0403 001	B	162 di 354								

5867.83      54879.7      777.010

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL , M    HORIZONTAL Y, M    HORIZONTAL Z, M  
 1.06271E-03    -1.30868E-03    5.66922E-03

ANGLE ROT. X,RAD    ANGLE ROT. Y,RAD    ANGLE ROT. Z,RAD  
 3.01946E-05    1.03552E-04    3.69989E-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

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
1	1.8282E-03	-1.5804E-03	5.8051E-03	3.0195E-05	1.0355E-04	3.6999E-05
2	1.9947E-03	-1.5804E-03	5.6692E-03	3.0195E-05	1.0355E-04	3.6999E-05
3	2.1612E-03	-1.5804E-03	5.5333E-03	3.0195E-05	1.0355E-04	3.6999E-05
4	1.3622E-03	-1.4445E-03	5.8051E-03	3.0195E-05	1.0355E-04	3.6999E-05
5	1.5287E-03	-1.4445E-03	5.6692E-03	3.0195E-05	1.0355E-04	3.6999E-05
6	1.6952E-03	-1.4445E-03	5.5333E-03	3.0195E-05	1.0355E-04	3.6999E-05
7	8.9622E-04	-1.3087E-03	5.8051E-03	3.0195E-05	1.0355E-04	3.6999E-05
8	1.0627E-03	-1.3087E-03	5.6692E-03	3.0195E-05	1.0355E-04	3.6999E-05
9	1.2292E-03	-1.3087E-03	5.5333E-03	3.0195E-05	1.0355E-04	3.6999E-05
10	4.3023E-04	-1.1728E-03	5.8051E-03	3.0195E-05	1.0355E-04	3.6999E-05
11	5.9673E-04	-1.1728E-03	5.6692E-03	3.0195E-05	1.0355E-04	3.6999E-05
12	7.6322E-04	-1.1728E-03	5.5333E-03	3.0195E-05	1.0355E-04	3.6999E-05
13	-3.5751E-05	-1.0369E-03	5.8051E-03	3.0195E-05	1.0355E-04	3.6999E-05
14	1.3074E-04	-1.0369E-03	5.6692E-03	3.0195E-05	1.0355E-04	3.6999E-05
15	2.9724E-04	-1.0369E-03	5.5333E-03	3.0195E-05	1.0355E-04	3.6999E-05

MINIMUM    -3.5751E-05    -1.5804E-03    5.5333E-03    3.0195E-05    1.0355E-04    3.6999E-05

Pile N.    13    3    1    1    1    1

MAXIMUM    2.1612E-03    -1.0369E-03    5.8051E-03    3.0195E-05    1.0355E-04    3.6999E-05

Pile N.    3    13    1    1    1    1

\* PILE TOP REACTIONS \*

PILE GROUP    FOR. X, KN    FOR. Y, KN    FOR. Z, KN    MOM X, KN- M    MOM Y, KN- M    MOM Z, KN- M

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
1	3186.0	-344.84	1292.2	10.064	-4189.1	-1106.2
2	3463.7	-333.99	1220.7	10.064	-3992.4	-1081.7
3	3638.6	-352.40	1254.7	10.064	-4033.5	-1123.0
4	2376.4	-249.14	1031.9	10.064	-3571.2	-848.31
5	2665.7	-230.77	932.55	10.064	-3298.6	-803.34
6	2954.9	-259.79	1021.8	10.064	-3494.5	-875.87
7	1566.8	-216.45	1000.4	10.064	-3493.3	-738.95
8	1856.1	-199.58	900.34	10.064	-3216.9	-697.28
9	2145.4	-226.30	993.14	10.064	-3424.0	-764.55
10	757.27	-191.83	1002.5	10.064	-3497.0	-649.28
11	1046.5	-176.84	902.34	10.064	-3220.5	-612.31
12	1335.8	-200.61	995.29	10.064	-3427.8	-672.04
13	-58.627	-174.44	1047.6	10.064	-3605.0	-577.10
14	230.38	-160.89	943.82	10.064	-3322.3	-544.18
15	523.76	-182.00	1037.5	10.064	-3527.9	-596.50

MINIMUM    -58.627    -352.40    900.34    10.064    -4189.1    -1123.0

Pile N.    13    3    8    1    1    3

MAXIMUM    3638.6    -160.89    1292.2    10.064    -3216.9    -544.18

Pile N.    3    14    1    1    8    14

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

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
1	1.8282E-03	-1.5804E-03	5.8051E-03	3.0195E-05	1.0355E-04	3.6999E-05
2	1.9947E-03	-1.5804E-03	5.6692E-03	3.0195E-05	1.0355E-04	3.6999E-05
3	2.1612E-03	-1.5804E-03	5.5333E-03	3.0195E-05	1.0355E-04	3.6999E-05
4	1.3622E-03	-1.4445E-03	5.8051E-03	3.0195E-05	1.0355E-04	3.6999E-05
5	1.5287E-03	-1.4445E-03	5.6692E-03	3.0195E-05	1.0355E-04	3.6999E-05
6	1.6952E-03	-1.4445E-03	5.5333E-03	3.0195E-05	1.0355E-04	3.6999E-05
7	8.9622E-04	-1.3087E-03	5.8051E-03	3.0195E-05	1.0355E-04	3.6999E-05
8	1.0627E-03	-1.3087E-03	5.6692E-03	3.0195E-05	1.0355E-04	3.6999E-05
9	1.2292E-03	-1.3087E-03	5.5333E-03	3.0195E-05	1.0355E-04	3.6999E-05
10	4.3023E-04	-1.1728E-03	5.8051E-03	3.0195E-05	1.0355E-04	3.6999E-05
11	5.9673E-04	-1.1728E-03	5.6692E-03	3.0195E-05	1.0355E-04	3.6999E-05
12	7.6322E-04	-1.1728E-03	5.5333E-03	3.0195E-05	1.0355E-04	3.6999E-05
13	-3.5751E-05	-1.0369E-03	5.8051E-03	3.0195E-05	1.0355E-04	3.6999E-05
14	1.3074E-04	-1.0369E-03	5.6692E-03	3.0195E-05	1.0355E-04	3.6999E-05
15	2.9724E-04	-1.0369E-03	5.5333E-03	3.0195E-05	1.0355E-04	3.6999E-05

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>				
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>					
<b>COMMESSA</b> <b>IF28</b>	<b>LOTTO</b> <b>01</b>	<b>CODIFICA</b> <b>E ZZ CL</b>	<b>DOCUMENTO</b> <b>VI0403 001</b>	<b>REV.</b> <b>B</b>	<b>FOGLIO</b> <b>163 di 354</b>

MINIMUM	-3.5751E-05	-1.5804E-03	5.5333E-03	3.0195E-05	1.0355E-04	3.6999E-05
Pile N.	13	1	3	1	1	1
MAXIMUM	2.1612E-03	-1.0369E-03	5.8051E-03	3.0195E-05	1.0355E-04	3.6999E-05
Pile N.	3	13	1	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP AXIAL, KN LAT. y, KN LAT. z, KN MOM x, KN- M MOM y, KN- M MOM z, KN- M

1	3186.0	-344.84	1292.2	10.064	-4189.1	-1106.2
2	3463.7	-333.99	1220.7	10.064	-3992.4	-1081.7
3	3638.6	-352.40	1254.7	10.064	-4033.5	-1123.0
4	2376.4	-249.14	1031.9	10.064	-3571.2	-848.31
5	2665.7	-230.77	932.55	10.064	-3298.6	-803.34
6	2954.9	-259.79	1021.8	10.064	-3494.5	-875.87
7	1566.8	-216.45	1000.4	10.064	-3493.3	-738.95
8	1856.1	-199.58	900.34	10.064	-3216.9	-697.28
9	2145.4	-226.30	993.14	10.064	-3424.0	-764.55
10	757.27	-191.83	1002.5	10.064	-3497.0	-649.28
11	1046.5	-176.84	902.34	10.064	-3220.5	-612.31
12	1335.8	-200.61	995.29	10.064	-3427.8	-672.04
13	-58.627	-174.44	1047.6	10.064	-3605.0	-577.10
14	230.38	-160.89	943.82	10.064	-3322.3	-544.18
15	523.76	-182.00	1037.5	10.064	-3527.9	-596.50

MINIMUM	-58.627	-352.40	900.34	10.064	-4189.1	-1123.0
Pile N.	13	3	8	1	3	
MAXIMUM	3638.6	-160.89	1292.2	10.064	-3216.9	-544.18
Pile N.	3	14	1	1	8	14

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







1	1.4879E+04
2	1.4444E+04
3	1.4695E+04
4	1.2423E+04
5	1.1755E+04
6	1.2545E+04
7	1.1663E+04
8	1.0984E+04
9	1.1802E+04
10	1.1163E+04
11	1.0486E+04
12	1.1298E+04
13	1.1052E+04
14	1.0291E+04
15	1.1095E+04

MINIMUM	1.0291E+04
Pile N.	14
MAXIMUM	1.4879E+04
Pile N.	1

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT KN- M	MOMENT KN- M	MOMENT KN	SHEAR KN	SHEAR KN/ M	SOIL REACT KN/ M	SOIL REACT KN/ M	TOTAL FLEX. RIG.	FLEX. RIG.
	y-DIR	z-DIR	y-DIR	z-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	-1.5804E-03	-9.2209E-05	-444.48	-4189.1	-344.88	-444.79	-135.10	-118.01	1802.9	7.8279E+06	7.8279E+06
x(M)	0.0000	10.620	6.4800	0.0000	0.0000	9.0000	4.1400	10.800	18.000	0.0000	0.0000
2	-1.5804E-03	-9.0585E-05	-433.17	-3992.4	-334.03	-418.96	-128.30	-109.23	1960.0	7.8279E+06	7.8279E+06
x(M)	0.0000	10.620	6.4800	0.0000	0.0000	9.0000	4.1400	10.980	18.000	0.0000	0.0000
3	-1.5804E-03	-8.8087E-05	-451.68	-4033.5	-352.45	-435.04	-139.46	-116.49	2059.0	7.8279E+06	7.8279E+06
x(M)	0.0000	10.440	6.4800	0.0000	0.0000	8.8200	4.1400	10.800	18.000	0.0000	0.0000
4	-1.4446E-03	-8.8496E-05	-334.28	-3571.2	-249.16	-328.70	-86.795	-79.008	1344.8	7.8279E+06	7.8279E+06
x(M)	0.0000	11.520	6.8400	0.0000	0.0000	9.7200	4.1400	11.700	18.000	0.0000	0.0000
5	-1.4446E-03	-8.8436E-05	-314.39	-3298.6	-230.79	-293.99	-76.910	-68.083	1508.5	7.8279E+06	7.8279E+06
x(M)	0.0000	11.880	7.0200	0.0000	0.0000	10.080	4.1400	12.060	18.000	0.0000	0.0000
6	-1.4446E-03	-8.9898E-05	-349.21	-3494.5	-259.82	-336.11	-91.465	-81.854	1672.2	7.8279E+06	7.8279E+06
x(M)	0.0000	11.340	6.8400	0.0000	0.0000	9.5400	4.1400	11.700	18.000	0.0000	0.0000
7	-1.3087E-03	-8.9281E-05	-294.32	-3493.3	-216.46	-317.04	-74.307	-74.965	886.65	7.8279E+06	7.8279E+06
x(M)	0.0000	11.700	7.0200	0.0000	0.0000	9.9000	4.1400	11.880	18.000	0.0000	0.0000
8	-1.3087E-03	-8.9462E-05	-275.98	-3216.9	-199.59	-281.72	-65.401	-64.480	1050.3	7.8279E+06	7.8279E+06
x(M)	0.0000	12.060	7.2000	0.0000	0.0000	10.080	4.1400	14.040	18.000	0.0000	0.0000
9	-1.3087E-03	-8.9971E-05	-307.93	-3424.0	-226.32	-323.45	-78.613	-77.798	1214.0	7.8279E+06	7.8279E+06
x(M)	0.0000	11.520	6.8400	0.0000	0.0000	9.7200	4.1400	11.880	18.000	0.0000	0.0000
10	-1.1728E-03	-8.9158E-05	-262.99	-3497.0	-191.84	-317.32	-66.209	-75.093	428.53	7.8279E+06	7.8279E+06
x(M)	0.0000	11.700	7.0200	0.0000	0.0000	9.9000	4.1400	11.880	18.000	0.0000	0.0000
11	-1.1728E-03	-8.9328E-05	-246.62	-3220.5	-176.84	-282.05	-58.276	-64.506	592.21	7.8279E+06	7.8279E+06
x(M)	0.0000	12.060	7.2000	0.0000	0.0000	10.080	4.1400	14.040	18.000	0.0000	0.0000
12	-1.1728E-03	-8.9852E-05	-275.21	-3427.8	-200.62	-323.74	-70.059	-77.939	755.90	7.8279E+06	7.8279E+06
x(M)	0.0000	11.520	6.8400	0.0000	0.0000	9.7200	4.1400	11.880	18.000	0.0000	0.0000
13	-1.0369E-03	-8.8036E-05	-239.77	-3605.0	-174.44	-333.43	-62.069	-80.606	33.176	7.8279E+06	7.8279E+06
x(M)	0.0000	11.520	6.8400	0.0000	0.0000	9.7200	4.1400	11.700	18.000	0.0000	0.0000
14	-1.0369E-03	-8.7927E-05	-224.89	-3322.3	-160.89	-296.51	-54.705	-69.058	130.37	7.8279E+06	7.8279E+06
x(M)	0.0000	11.880	7.0200	0.0000	0.0000	10.080	4.1400	12.060	18.000	0.0000	0.0000
15	-1.0369E-03	-8.9748E-05	-250.13	-3527.9	-182.00	-341.53	-65.420	-83.689	296.39	7.8279E+06	7.8279E+06

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	
COMMESSA <b>IF28</b> LOTTO <b>01</b> CODIFICA <b>E ZZ CL</b> DOCUMENTO <b>VI0403 001</b> REV. <b>B</b> FOGLIO <b>164 di 354</b>	

x(M) 0.0000 11.340 6.6600 0.0000 0.0000 9.5400 4.1400 11.520 18.000 0.0000 0.0000

Min. -1.5804E-03 -9.2209E-05 -451.68 -4189.1 -352.45 -444.79 -139.46 -118.01 33.176 7.8279E+06 7.8279E+06

Pile N. 1 1 3 1 3 1 3 1 13 1 1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL.	DISPL.	MOMENT		SHEAR		SOIL REACT		SOIL REACT		TOTAL	FLEX. RIG.	FLEX. RIG.
			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	2.4869E-05	5.8051E-03	1106.2	1643.5	119.86	1292.4	31.798	502.67	1.4879E+04	7.8279E+06	7.8279E+06		
x(M)	10.620	0.0000	0.0000	6.4800	9.0000	0.0000	10.800	4.1400	0.0000	0.0000	0.0000		
2	2.5045E-05	5.6692E-03	1081.7	1562.9	115.75	1220.8	30.149	465.76	1.4444E+04	7.8279E+06	7.8279E+06		
x(M)	10.620	0.0000	0.0000	6.4800	9.0000	0.0000	10.980	4.1400	0.0000	0.0000	0.0000		
3	2.4972E-05	5.5333E-03	1123.0	1590.6	123.25	1254.8	32.982	493.57	1.4695E+04	7.8279E+06	7.8279E+06		
x(M)	10.440	0.0000	0.0000	6.4800	8.8200	0.0000	10.620	4.1400	0.0000	0.0000	0.0000		
4	2.1727E-05	5.8051E-03	848.31	1355.5	80.746	1032.0	19.368	355.35	1.2423E+04	7.8279E+06	7.8279E+06		
x(M)	11.520	0.0000	0.0000	7.0200	9.7200	0.0000	11.700	4.1400	0.0000	0.0000	0.0000		
5	2.2234E-05	5.6692E-03	803.34	1244.7	73.873	932.65	17.093	307.26	1.1755E+04	7.8279E+06	7.8279E+06		
x(M)	11.880	0.0000	0.0000	7.2000	10.080	0.0000	12.060	4.1400	0.0000	0.0000	0.0000		
6	2.3194E-05	5.5333E-03	875.87	1348.5	86.657	1021.9	21.071	356.15	1.2545E+04	7.8279E+06	7.8279E+06		
x(M)	11.340	0.0000	0.0000	6.8400	9.5400	0.0000	11.700	4.1400	0.0000	0.0000	0.0000		
7	1.9751E-05	5.8051E-03	738.95	1321.3	70.130	1000.5	16.551	338.02	1.1663E+04	7.8279E+06	7.8279E+06		
x(M)	11.700	0.0000	0.0000	7.0200	9.9000	0.0000	11.880	4.1400	0.0000	0.0000	0.0000		
8	2.0264E-05	5.6692E-03	697.28	1209.3	63.923	900.41	14.522	290.33	1.0984E+04	7.8279E+06	7.8279E+06		
x(M)	12.060	0.0000	0.0000	7.2000	10.080	0.0000	12.240	4.1400	0.0000	0.0000	0.0000		
9	2.0950E-05	5.5333E-03	764.55	1316.7	75.175	993.22	18.054	340.09	1.1802E+04	7.8279E+06	7.8279E+06		
x(M)	11.340	0.0000	0.0000	7.0200	9.5400	0.0000	11.700	4.1400	0.0000	0.0000	0.0000		
10	1.7569E-05	5.8051E-03	649.28	1322.5	62.523	1002.5	14.764	338.78	1.1163E+04	7.8279E+06	7.8279E+06		
x(M)	11.700	0.0000	0.0000	7.0200	9.9000	0.0000	11.700	4.1400	0.0000	0.0000	0.0000		
11	1.8018E-05	5.6692E-03	612.31	1210.5	57.025	902.38	12.954	291.02	1.0486E+04	7.8279E+06	7.8279E+06		
x(M)	12.060	0.0000	0.0000	7.2000	10.080	0.0000	12.060	4.1400	0.0000	0.0000	0.0000		
12	1.8657E-05	5.5333E-03	672.04	1317.9	67.073	995.34	16.106	340.90	1.1298E+04	7.8279E+06	7.8279E+06		
x(M)	11.340	0.0000	0.0000	7.0200	9.5400	0.0000	11.700	4.1400	0.0000	0.0000	0.0000		
13	1.5230E-05	5.8051E-03	577.10	1368.4	57.745	1047.6	13.916	362.82	1.1052E+04	7.8279E+06	7.8279E+06		
x(M)	11.520	0.0000	0.0000	7.0200	9.7200	0.0000	11.520	4.1400	0.0000	0.0000	0.0000		
14	1.5565E-05	5.6692E-03	544.18	1253.3	52.587	943.83	12.206	312.12	1.0291E+04	7.8279E+06	7.8279E+06		
x(M)	11.880	0.0000	0.0000	7.2000	9.9000	0.0000	11.880	4.1400	0.0000	0.0000	0.0000		
15	1.6362E-05	5.5333E-03	596.50	1362.2	61.999	1037.5	15.170	363.62	1.1095E+04	7.8279E+06	7.8279E+06		
x(M)	11.160	0.0000	0.0000	6.8400	9.3600	0.0000	11.520	4.1400	0.0000	0.0000	0.0000		
Max.	2.5045E-05	5.8051E-03	1123.0	1643.5	123.25	1292.4	32.982	502.67	1.4879E+04	7.8279E+06	7.8279E+06		
Pile N.	2	1	3	1	3	1	3	1	1	1	1		

LOAD CASE : 17  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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	0.5846	1.0000
2	0.5791	1.0000
3	0.8661	1.0000
4	0.4955	1.0000
5	0.4951	1.0000
6	0.8053	1.0000
7	0.4945	1.0000
8	0.4940	1.0000
9	0.8053	1.0000
10	0.4955	1.0000
11	0.4951	1.0000
12	0.8053	1.0000
13	0.5845	1.0000
14	0.5791	1.0000
15	0.8660	1.0000







\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN    HOR. LOAD Y, KN    HOR. LOAD Z, KN  
23041.1    -9563.44    87.4731

MOMENT X, KN- M    MOMENT Y, KN- M    MOMENT Z, KN- M  
-17.7378    836.966    22388.8

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

<b>APPALTATORE:</b> Consorzio <span style="margin-left: 100px;">Soci</span>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>												
<b>PROGETTAZIONE:</b> Mandataria <span style="margin-left: 100px;">Mandanti</span>   													
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">COMMESSA</td> <td style="width: 10%;">LOTTO</td> <td style="width: 15%;">CODIFICA</td> <td style="width: 15%;">DOCUMENTO</td> <td style="width: 10%;">REV.</td> <td style="width: 10%;">FOGLIO</td> </tr> <tr> <td>IF28</td> <td>01</td> <td>E ZZ CL</td> <td>VI0403 001</td> <td>B</td> <td>165 di 354</td> </tr> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF28	01	E ZZ CL	VI0403 001	B	165 di 354
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO								
IF28	01	E ZZ CL	VI0403 001	B	165 di 354								

VERTICAL , M    HORIZONTAL Y, M    HORIZONTAL Z, M  
8.79317E-04    -3.09048E-03    2.73603E-05

ANGLE ROT. X,RAD    ANGLE ROT. Y,RAD    ANGLE ROT. Z,RAD  
9.31831E-08    1.04295E-06    1.45241E-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

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
1	2.3512E-04	-3.0913E-03	2.7780E-05	9.3183E-08	1.0429E-06	1.4524E-04
2	8.8870E-04	-3.0913E-03	2.7360E-05	9.3183E-08	1.0429E-06	1.4524E-04
3	1.5423E-03	-3.0913E-03	2.6941E-05	9.3183E-08	1.0429E-06	1.4524E-04
4	2.3043E-04	-3.0909E-03	2.7780E-05	9.3183E-08	1.0429E-06	1.4524E-04
5	8.8401E-04	-3.0909E-03	2.7360E-05	9.3183E-08	1.0429E-06	1.4524E-04
6	1.5376E-03	-3.0909E-03	2.6941E-05	9.3183E-08	1.0429E-06	1.4524E-04
7	2.2573E-04	-3.0905E-03	2.7780E-05	9.3183E-08	1.0429E-06	1.4524E-04
8	8.7932E-04	-3.0905E-03	2.7360E-05	9.3183E-08	1.0429E-06	1.4524E-04
9	1.5329E-03	-3.0905E-03	2.6941E-05	9.3183E-08	1.0429E-06	1.4524E-04
10	2.2104E-04	-3.0901E-03	2.7780E-05	9.3183E-08	1.0429E-06	1.4524E-04
11	8.7462E-04	-3.0901E-03	2.7360E-05	9.3183E-08	1.0429E-06	1.4524E-04
12	1.5282E-03	-3.0901E-03	2.6941E-05	9.3183E-08	1.0429E-06	1.4524E-04
13	2.1635E-04	-3.0896E-03	2.7780E-05	9.3183E-08	1.0429E-06	1.4524E-04
14	8.6993E-04	-3.0896E-03	2.7360E-05	9.3183E-08	1.0429E-06	1.4524E-04
15	1.5235E-03	-3.0896E-03	2.6941E-05	9.3183E-08	1.0429E-06	1.4524E-04

MINIMUM    2.1635E-04    -3.0913E-03    2.6941E-05    9.3183E-08    1.0429E-06    1.4524E-04

Pile N.    13    1    3    1    1    1

MAXIMUM    1.5423E-03    -3.0896E-03    2.7780E-05    9.3183E-08    1.0429E-06    1.4524E-04

Pile N.    3    13    1    1    1    1

\* PILE TOP REACTIONS \*

PILE GROUP    FOR. X, KN    FOR. Y, KN    FOR. Z, KN    MOM X, KN- M    MOM Y, KN- M    MOM Z, KN- M

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
1	414.30	-613.74	5.7215	0.031058	-17.801	-1867.6
2	1553.8	-610.15	5.5904	0.031058	-17.408	-1860.7
3	2689.3	-768.94	6.9046	0.031058	-20.203	-2210.9
4	406.03	-560.16	5.2291	0.031058	-16.684	-1746.3
5	1545.6	-559.46	5.1323	0.031058	-16.368	-1745.8
6	2681.1	-740.68	6.6547	0.031058	-19.688	-2152.7
7	397.76	-559.42	5.2232	0.031058	-16.670	-1744.5
8	1537.5	-558.73	5.1265	0.031058	-16.354	-1744.0
9	2673.0	-740.58	6.6549	0.031058	-19.689	-2152.4
10	389.49	-560.01	5.2295	0.031058	-16.685	-1745.8
11	1529.3	-559.32	5.1327	0.031058	-16.368	-1745.2
12	2664.8	-740.49	6.6551	0.031058	-19.689	-2152.1
13	381.22	-613.41	5.7221	0.031058	-17.803	-1866.5
14	1521.2	-609.82	5.5910	0.031058	-17.410	-1859.5
15	2656.7	-768.53	6.9054	0.031058	-20.204	-2209.5

MINIMUM    381.22    -768.94    5.1265    0.031058    -20.204    -2210.9

Pile N.    13    3    8    1    15    3

MAXIMUM    2689.3    -558.73    6.9054    0.031058    -16.354    -1744.0

Pile N.    3    8    15    1    8    8

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP    DISP. x, M    DISP. y, M    DISP. z, M    ROT. x,RAD    ROT. y,RAD    ROT. z,RAD

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
1	2.3512E-04	-3.0913E-03	2.7780E-05	9.3183E-08	1.0429E-06	1.4524E-04
2	8.8870E-04	-3.0913E-03	2.7360E-05	9.3183E-08	1.0429E-06	1.4524E-04
3	1.5423E-03	-3.0913E-03	2.6941E-05	9.3183E-08	1.0429E-06	1.4524E-04
4	2.3043E-04	-3.0909E-03	2.7780E-05	9.3183E-08	1.0429E-06	1.4524E-04
5	8.8401E-04	-3.0909E-03	2.7360E-05	9.3183E-08	1.0429E-06	1.4524E-04
6	1.5376E-03	-3.0909E-03	2.6941E-05	9.3183E-08	1.0429E-06	1.4524E-04
7	2.2573E-04	-3.0905E-03	2.7780E-05	9.3183E-08	1.0429E-06	1.4524E-04
8	8.7932E-04	-3.0905E-03	2.7360E-05	9.3183E-08	1.0429E-06	1.4524E-04
9	1.5329E-03	-3.0905E-03	2.6941E-05	9.3183E-08	1.0429E-06	1.4524E-04
10	2.2104E-04	-3.0901E-03	2.7780E-05	9.3183E-08	1.0429E-06	1.4524E-04
11	8.7462E-04	-3.0901E-03	2.7360E-05	9.3183E-08	1.0429E-06	1.4524E-04
12	1.5282E-03	-3.0901E-03	2.6941E-05	9.3183E-08	1.0429E-06	1.4524E-04
13	2.1635E-04	-3.0896E-03	2.7780E-05	9.3183E-08	1.0429E-06	1.4524E-04
14	8.6993E-04	-3.0896E-03	2.7360E-05	9.3183E-08	1.0429E-06	1.4524E-04
15	1.5235E-03	-3.0896E-03	2.6941E-05	9.3183E-08	1.0429E-06	1.4524E-04

MINIMUM    2.1635E-04    -3.0913E-03    2.6941E-05    9.3183E-08    1.0429E-06    1.4524E-04

Pile N.    13    1    3    1    1    1

MAXIMUM    1.5423E-03    -3.0896E-03    2.7780E-05    9.3183E-08    1.0429E-06    1.4524E-04

Pile N.    3    13    1    1    1    1

\* PILE TOP REACTIONS \*

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>				
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>					
<b>COMMESSA</b> <b>IF28</b>	<b>LOTTO</b> <b>01</b>	<b>CODIFICA</b> <b>E ZZ CL</b>	<b>DOCUMENTO</b> <b>VI0403 001</b>	<b>REV.</b> <b>B</b>	<b>FOGLIO</b> <b>166 di 354</b>

PILE GROUP AXIAL, KN LAT. y, KN LAT. z, KN MOM x, KN- M MOM y, KN- M MOM z, KN- M

1	414.30	-613.74	5.7215	0.031058	-17.801	-1867.6
2	1553.8	-610.15	5.5904	0.031058	-17.408	-1860.7
3	2689.3	-768.94	6.9046	0.031058	-20.203	-2210.9
4	406.03	-560.16	5.2291	0.031058	-16.684	-1746.3
5	1545.6	-559.46	5.1323	0.031058	-16.368	-1745.8
6	2681.1	-740.68	6.6547	0.031058	-19.688	-2152.7
7	397.76	-559.42	5.2232	0.031058	-16.670	-1744.5
8	1537.5	-558.73	5.1265	0.031058	-16.354	-1744.0
9	2673.0	-740.58	6.6549	0.031058	-19.689	-2152.4
10	389.49	-560.01	5.2295	0.031058	-16.685	-1745.8
11	1529.3	-559.32	5.1327	0.031058	-16.368	-1745.2
12	2664.8	-740.49	6.6551	0.031058	-19.689	-2152.1
13	381.22	-613.41	5.7221	0.031058	-17.803	-1866.5
14	1521.2	-609.82	5.5910	0.031058	-17.410	-1859.5
15	2656.7	-768.53	6.9054	0.031058	-20.204	-2209.5
MINIMUM	381.22	-768.94	5.1265	0.031058	-20.204	-2210.9
Pile N.	13	3	8	1	15	3
MAXIMUM	2689.3	-558.73	6.9054	0.031058	-16.354	-1744.0
Pile N.	3	8	15	1	8	8

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







1	5871.3
2	6495.2
3	8194.7
4	5500.5
5	6143.7
6	8014.5
7	5490.4
8	6133.7
9	8008.9
10	5489.5
11	6132.9
12	8003.3
13	5849.0
14	6473.2
15	8172.1
MINIMUM	5489.5
Pile N.	10
MAXIMUM	8194.7
Pile N.	3

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL.		MOMENT		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			
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2	KN- M**2	KN- M**2		
1	-3.0913E-03	-4.4154E-07	-843.22	-17.801	-613.74	-2.0369	-246.92	-0.5414	234.45	7.8279E+06	7.8279E+06		
x(M)	0.0000	10.620	6.3000	0.0000	0.0000	8.8200	4.1400	10.800	18.000	0.0000	0.0000		
2	-3.0913E-03	-4.3574E-07	-840.04	-17.408	-610.18	-1.9930	-244.90	-0.5285	879.26	7.8279E+06	7.8279E+06		
x(M)	0.0000	10.620	6.3000	0.0000	0.0000	8.8200	4.1400	10.800	18.000	0.0000	0.0000		
3	-3.0913E-03	-4.6712E-07	-1024.3	-20.203	-769.01	-2.6662	-350.01	-0.8137	1521.8	7.8279E+06	7.8279E+06		
x(M)	0.0000	9.5400	5.9400	0.0000	0.0000	8.1000	4.1400	9.9000	18.000	0.0000	0.0000		
4	-3.0909E-03	-4.4847E-07	-784.75	-16.684	-560.16	-1.8257	-213.80	-0.4644	229.77	7.8279E+06	7.8279E+06		
x(M)	0.0000	10.980	6.4800	0.0000	0.0000	9.1800	4.1400	11.160	18.000	0.0000	0.0000		
5	-3.0909E-03	-4.4187E-07	-784.71	-16.368	-559.49	-1.7967	-213.63	-0.4568	874.65	7.8279E+06	7.8279E+06		
x(M)	0.0000	10.980	6.4800	0.0000	0.0000	9.1800	4.1400	11.160	18.000	0.0000	0.0000		
6	-3.0909E-03	-4.7001E-07	-995.84	-19.688	-740.75	-2.5588	-329.27	-0.7625	1517.2	7.8279E+06	7.8279E+06		
x(M)	0.0000	9.7200	5.9400	0.0000	0.0000	8.1000	4.1400	10.080	18.000	0.0000	0.0000		
7	-3.0905E-03	-4.4866E-07	-783.93	-16.670	-559.43	-1.8233	-213.39	-0.4635	225.09	7.8279E+06	7.8279E+06		
x(M)	0.0000	10.980	6.4800	0.0000	0.0000	9.1800	4.1400	11.160	18.000	0.0000	0.0000		
8	-3.0905E-03	-4.4206E-07	-783.89	-16.354	-558.76	-1.7944	-213.21	-0.4560	870.04	7.8279E+06	7.8279E+06		
x(M)	0.0000	10.980	6.4800	0.0000	0.0000	9.1800	4.1400	11.160	18.000	0.0000	0.0000		
9	-3.0905E-03	-4.7001E-07	-995.72	-19.689	-740.65	-2.5589	-329.24	-0.7626	1512.6	7.8279E+06	7.8279E+06		
x(M)	0.0000	9.7200	5.9400	0.0000	0.0000	8.1000	4.1400	10.080	18.000	0.0000	0.0000		
10	-3.0901E-03	-4.4846E-07	-784.58	-16.685	-560.02	-1.8258	-213.76	-0.4645	220.41	7.8279E+06	7.8279E+06		
x(M)	0.0000	10.980	6.4800	0.0000	0.0000	9.1800	4.1400	11.160	18.000	0.0000	0.0000		
11	-3.0901E-03	-4.4186E-07	-784.54	-16.368	-559.35	-1.7969	-213.59	-0.4569	865.42	7.8279E+06	7.8279E+06		
x(M)	0.0000	10.980	6.4800	0.0000	0.0000	9.1800	4.1400	11.160	18.000	0.0000	0.0000		
12	-3.0901E-03	-4.7001E-07	-995.61	-19.689	-740.55	-2.5590	-329.21	-0.7626	1508.0	7.8279E+06	7.8279E+06		
x(M)	0.0000	9.7200	5.9400	0.0000	0.0000	8.1000	4.1400	10.080	18.000	0.0000	0.0000		
13	-3.0896E-03	-4.4152E-07	-842.83	-17.803	-613.42	-2.0372	-246.83	-0.5416	215.73	7.8279E+06	7.8279E+06		
x(M)	0.0000	10.620	6.3000	0.0000	0.0000	8.8200	4.1400	10.800	18.000	0.0000	0.0000		
14	-3.0896E-03	-4.3573E-07	-839.65	-17.410	-609.85	-1.9934	-244.80	-0.5287	860.81	7.8279E+06	7.8279E+06		
x(M)	0.0000	10.620	6.3000	0.0000	0.0000	8.8200	4.1400	10.800	18.000	0.0000	0.0000		
15	-3.0896E-03	-4.6711E-07	-1023.8	-20.204	-768.60	-2.6666	-349.88	-0.8139	1503.4	7.8279E+06	7.8279E+06		
x(M)	0.0000	9.5400	5.9400	0.0000	0.0000	8.1000	4.1400	9.9000	18.000	0.0000	0.0000		
Min.	-3.0913E-03	-4.7001E-07	-1024.3	-20.204	-769.01	-2.6666	-350.01	-0.8139	215.73	7.8279E+06	7.8279E+06		
Pile N.	1	6	3	15	3	15	13	1	1				

\* MAXIMUM VALUES AND LOCATIONS \*

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	

PILE	DISPL.	DISPL.	MOMENT	MOMENT	SHEAR	SHEAR	SOIL REACT	SOIL REACT	TOTAL	FLEX. RIG.	FLEX. RIG.
	y-DIR	z-DIR	z-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	4.8381E-05	2.7780E-05	1867.6	7.6525	223.21	5.7216	59.201	2.2704	5871.3	7.8279E+06	7.8279E+06
x(M)	10.440	0.0000	0.0000	6.3000	8.8200	0.0000	10.800	4.1400	0.0000	0.0000	0.0000
2	4.8510E-05	2.7360E-05	1860.7	7.5041	221.99	5.5907	58.743	2.2148	6495.2	7.8279E+06	7.8279E+06
x(M)	10.620	0.0000	0.0000	6.4800	8.8200	0.0000	10.800	4.1400	0.0000	0.0000	0.0000
3	5.3013E-05	2.6941E-05	2210.9	9.0134	301.67	6.9053	92.083	3.1100	8194.7	7.8279E+06	7.8279E+06
x(M)	9.5400	0.0000	0.0000	5.9400	8.1000	0.0000	9.9000	4.1400	0.0000	0.0000	0.0000
4	4.9138E-05	2.7780E-05	1746.3	7.1234	199.76	5.2292	50.745	1.9668	5500.5	7.8279E+06	7.8279E+06
x(M)	10.800	0.0000	0.0000	6.6600	9.1800	0.0000	11.160	4.1400	0.0000	0.0000	0.0000
5	4.9205E-05	2.7360E-05	1745.8	7.0107	199.80	5.1326	50.740	1.9328	6143.7	7.8279E+06	7.8279E+06
x(M)	10.800	0.0000	0.0000	6.6600	9.1800	0.0000	11.160	4.1400	0.0000	0.0000	0.0000
6	5.3302E-05	2.6941E-05	2152.7	8.7650	289.67	6.6553	86.237	2.9264	8014.5	7.8279E+06	7.8279E+06
x(M)	9.7200	0.0000	0.0000	6.1200	8.1000	0.0000	10.080	4.1400	0.0000	0.0000	0.0000
7	4.9137E-05	2.7780E-05	1744.5	7.1173	199.47	5.2233	50.644	1.9632	5490.4	7.8279E+06	7.8279E+06
x(M)	10.800	0.0000	0.0000	6.6600	9.1800	0.0000	11.160	4.1400	0.0000	0.0000	0.0000
8	4.9204E-05	2.7360E-05	1744.0	7.0047	199.52	5.1268	50.639	1.9293	6133.7	7.8279E+06	7.8279E+06
x(M)	10.800	0.0000	0.0000	6.6600	9.1800	0.0000	11.160	4.1400	0.0000	0.0000	0.0000
9	5.3294E-05	2.6941E-05	2152.4	8.7653	289.64	6.6555	86.230	2.9266	8008.9	7.8279E+06	7.8279E+06
x(M)	9.7200	0.0000	0.0000	6.1200	8.1000	0.0000	10.080	4.1400	0.0000	0.0000	0.0000
10	4.9123E-05	2.7780E-05	1745.8	7.1238	199.72	5.2296	50.736	1.9670	5489.5	7.8279E+06	7.8279E+06
x(M)	10.800	0.0000	0.0000	6.6600	9.1800	0.0000	11.160	4.1400	0.0000	0.0000	0.0000
11	4.9191E-05	2.7360E-05	1745.2	7.0111	199.76	5.1330	50.731	1.9331	6132.9	7.8279E+06	7.8279E+06
x(M)	10.800	0.0000	0.0000	6.6600	9.1800	0.0000	11.160	4.1400	0.0000	0.0000	0.0000
12	5.3287E-05	2.6941E-05	2152.1	8.7655	289.61	6.6557	86.223	2.9268	8003.3	7.8279E+06	7.8279E+06
x(M)	9.7200	0.0000	0.0000	6.1200	8.1000	0.0000	10.080	4.1400	0.0000	0.0000	0.0000
13	4.8352E-05	2.7780E-05	1866.5	7.6533	223.11	5.7222	59.178	2.2709	5849.0	7.8279E+06	7.8279E+06
x(M)	10.440	0.0000	0.0000	6.3000	8.8200	0.0000	10.800	4.1400	0.0000	0.0000	0.0000
14	4.8480E-05	2.7360E-05	1859.5	7.5048	221.90	5.5913	58.723	2.2153	6473.2	7.8279E+06	7.8279E+06
x(M)	10.620	0.0000	0.0000	6.4800	8.8200	0.0000	10.800	4.1400	0.0000	0.0000	0.0000
15	5.2981E-05	2.6941E-05	2209.5	9.0143	301.53	6.9060	92.050	3.1107	8172.1	7.8279E+06	7.8279E+06
x(M)	9.5400	0.0000	0.0000	5.9400	8.1000	0.0000	9.9000	4.1400	0.0000	0.0000	0.0000
Max.	5.3302E-05	2.7780E-05	2210.9	9.0143	301.67	6.9060	92.083	3.1107	8194.7	7.8279E+06	7.8279E+06
Pile N.	6	1	3	15	3	15	3	15	3	1	1

LOAD CASE : 18  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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	0.5794	1.0000
3	0.5850	1.0000
4	0.8050	1.0000
5	0.4951	1.0000
6	0.4956	1.0000
7	0.8050	1.0000
8	0.4940	1.0000
9	0.4945	1.0000
10	0.8050	1.0000
11	0.4951	1.0000
12	0.4956	1.0000
13	0.8658	1.0000
14	0.5790	1.0000
15	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
36372.9	1824.78	87.4731
MOMENT X, KN-M	MOMENT Y, KN-M	MOMENT Z, KN-M
-20.9962	847.306	-20082.9

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
1.39009E-03	5.72868E-04	2.05053E-05
ANGLE ROT. X,RAD	ANGLE ROT. Y,RAD	ANGLE ROT. Z,RAD
-1.66400E-07	1.03830E-06	-6.91140E-05

<b>APPALTATORE:</b> Consorzio  Soci  	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>												
<b>PROGETTAZIONE:</b> Mandataria  Mandanti  													
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">COMMESSA</td> <td style="width: 10%;">LOTTO</td> <td style="width: 15%;">CODIFICA</td> <td style="width: 15%;">DOCUMENTO</td> <td style="width: 10%;">REV.</td> <td style="width: 35%;">FOGLIO</td> </tr> <tr> <td>IF28</td> <td>01</td> <td>E ZZ CL</td> <td>VI0403 001</td> <td>B</td> <td>168 di 354</td> </tr> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF28	01	E ZZ CL	VI0403 001	B	168 di 354
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO								
IF28	01	E ZZ CL	VI0403 001	B	168 di 354								

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

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
1	1.7104E-03	5.7437E-04	1.9756E-05	-1.6640E-07	1.0383E-06	-6.9114E-05
2	1.3994E-03	5.7437E-04	2.0505E-05	-1.6640E-07	1.0383E-06	-6.9114E-05
3	1.0884E-03	5.7437E-04	2.1254E-05	-1.6640E-07	1.0383E-06	-6.9114E-05
4	1.7058E-03	5.7362E-04	1.9756E-05	-1.6640E-07	1.0383E-06	-6.9114E-05
5	1.3948E-03	5.7362E-04	2.0505E-05	-1.6640E-07	1.0383E-06	-6.9114E-05
6	1.0838E-03	5.7362E-04	2.1254E-05	-1.6640E-07	1.0383E-06	-6.9114E-05
7	1.7011E-03	5.7287E-04	1.9756E-05	-1.6640E-07	1.0383E-06	-6.9114E-05
8	1.3901E-03	5.7287E-04	2.0505E-05	-1.6640E-07	1.0383E-06	-6.9114E-05
9	1.0791E-03	5.7287E-04	2.1254E-05	-1.6640E-07	1.0383E-06	-6.9114E-05
10	1.6964E-03	5.7212E-04	1.9756E-05	-1.6640E-07	1.0383E-06	-6.9114E-05
11	1.3854E-03	5.7212E-04	2.0505E-05	-1.6640E-07	1.0383E-06	-6.9114E-05
12	1.0744E-03	5.7212E-04	2.1254E-05	-1.6640E-07	1.0383E-06	-6.9114E-05
13	1.6918E-03	5.7137E-04	1.9756E-05	-1.6640E-07	1.0383E-06	-6.9114E-05
14	1.3807E-03	5.7137E-04	2.0505E-05	-1.6640E-07	1.0383E-06	-6.9114E-05
15	1.0697E-03	5.7137E-04	2.1254E-05	-1.6640E-07	1.0383E-06	-6.9114E-05

MINIMUM	1.0697E-03	5.7137E-04	1.9756E-05	-1.6640E-07	1.0383E-06	-6.9114E-05
Pile N.	15	13	1	1	1	1
MAXIMUM	1.7104E-03	5.7437E-04	2.1254E-05	-1.6640E-07	1.0383E-06	-6.9114E-05
Pile N.	1	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

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
1	2981.4	141.05	6.3570	-0.055461	-17.314	319.90
2	2441.1	118.56	5.6950	-0.055461	-16.315	277.09
3	1900.8	119.10	5.9653	-0.055461	-17.125	278.04
4	2973.3	136.44	6.1826	-0.055461	-16.985	311.06
5	2433.0	110.47	5.3610	-0.055461	-15.637	260.73
6	1892.6	110.56	5.5981	-0.055461	-16.380	260.81
7	2965.2	136.19	6.1839	-0.055461	-16.988	310.30
8	2424.9	110.15	5.3577	-0.055461	-15.630	259.84
9	1884.5	110.25	5.5946	-0.055461	-16.373	259.92
10	2957.1	135.94	6.1852	-0.055461	-16.991	309.54
11	2416.7	110.05	5.3633	-0.055461	-15.642	259.37
12	1876.4	110.15	5.6005	-0.055461	-16.385	259.45
13	2949.0	140.02	6.3615	-0.055461	-17.324	316.78
14	2408.6	117.65	5.6986	-0.055461	-16.324	274.21
15	1868.3	118.19	5.9690	-0.055461	-17.134	275.16

MINIMUM	1868.3	110.05	5.3577	-0.055461	-17.324	259.37
Pile N.	15	11	8	1	13	11
MAXIMUM	2981.4	141.05	6.3615	-0.055461	-15.630	319.90
Pile N.	1	1	13	1	8	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

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
1	1.7104E-03	5.7437E-04	1.9756E-05	-1.6640E-07	1.0383E-06	-6.9114E-05
2	1.3994E-03	5.7437E-04	2.0505E-05	-1.6640E-07	1.0383E-06	-6.9114E-05
3	1.0884E-03	5.7437E-04	2.1254E-05	-1.6640E-07	1.0383E-06	-6.9114E-05
4	1.7058E-03	5.7362E-04	1.9756E-05	-1.6640E-07	1.0383E-06	-6.9114E-05
5	1.3948E-03	5.7362E-04	2.0505E-05	-1.6640E-07	1.0383E-06	-6.9114E-05
6	1.0838E-03	5.7362E-04	2.1254E-05	-1.6640E-07	1.0383E-06	-6.9114E-05
7	1.7011E-03	5.7287E-04	1.9756E-05	-1.6640E-07	1.0383E-06	-6.9114E-05
8	1.3901E-03	5.7287E-04	2.0505E-05	-1.6640E-07	1.0383E-06	-6.9114E-05
9	1.0791E-03	5.7287E-04	2.1254E-05	-1.6640E-07	1.0383E-06	-6.9114E-05
10	1.6964E-03	5.7212E-04	1.9756E-05	-1.6640E-07	1.0383E-06	-6.9114E-05
11	1.3854E-03	5.7212E-04	2.0505E-05	-1.6640E-07	1.0383E-06	-6.9114E-05
12	1.0744E-03	5.7212E-04	2.1254E-05	-1.6640E-07	1.0383E-06	-6.9114E-05
13	1.6918E-03	5.7137E-04	1.9756E-05	-1.6640E-07	1.0383E-06	-6.9114E-05
14	1.3807E-03	5.7137E-04	2.0505E-05	-1.6640E-07	1.0383E-06	-6.9114E-05
15	1.0697E-03	5.7137E-04	2.1254E-05	-1.6640E-07	1.0383E-06	-6.9114E-05

MINIMUM	1.0697E-03	5.7137E-04	1.9756E-05	-1.6640E-07	1.0383E-06	-6.9114E-05
Pile N.	15	13	1	1	1	1
MAXIMUM	1.7104E-03	5.7437E-04	2.1254E-05	-1.6640E-07	1.0383E-06	-6.9114E-05
Pile N.	1	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	2981.4	141.05	6.3570	-0.055461	-17.314	319.90
2	2441.1	118.56	5.6950	-0.055461	-16.315	277.09
3	1900.8	119.10	5.9653	-0.055461	-17.125	278.04



## APPALTATORE:

Consorzio



Soci



## ITINERARIO NAPOLI – BARI

RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

## PROGETTAZIONE:

Mandataria



Mandanti



## PROGETTO ESECUTIVO

## RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO
IF28	01	E ZZ CL	VI0403 001	B	169 di 354

4	2973.3	136.44	6.1826	-0.055461	-16.985	311.06
5	2433.0	110.47	5.3610	-0.055461	-15.637	260.73
6	1892.6	110.56	5.5981	-0.055461	-16.380	260.81
7	2965.2	136.19	6.1839	-0.055461	-16.988	310.30
8	2424.9	110.15	5.3577	-0.055461	-15.630	259.84
9	1884.5	110.25	5.5946	-0.055461	-16.373	259.92
10	2957.1	135.94	6.1852	-0.055461	-16.991	309.54
11	2416.7	110.05	5.3633	-0.055461	-15.642	259.37
12	1876.4	110.15	5.6005	-0.055461	-16.385	259.45
13	2949.0	140.02	6.3615	-0.055461	-17.324	316.78
14	2408.6	117.65	5.6986	-0.055461	-16.324	274.21
15	1868.3	118.19	5.9690	-0.055461	-17.134	275.16

MINIMUM	1868.3	110.05	5.3577	-0.055461	-17.324	259.37
Pile N.	15	11	8	1	13	11
MAXIMUM	2981.4	141.05	6.3615	-0.055461	-15.630	319.90
Pile N.	1	1	13	1	8	1

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

1	2654.0
2	2219.1
3	1916.3
4	2622.7
5	2165.1
6	1859.7
7	2615.9
8	2157.8
9	1852.4
10	2609.0
11	2151.8
12	1846.4
13	2626.2
14	2192.1
15	1889.3

MINIMUM	1846.4
Pile N.	12
MAXIMUM	2654.0
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.
y-DIR	z-DIR	z-DIR	y-DIR	y-DIR	z-DIR	y-DIR	z-DIR	z-DIR	y-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		
1	-1.0717E-05	-4.0330E-07	-319.90	-17.314	-82.008	-3.0795	-30.597	-1.1630	1687.1	7.8279E+06	7.8279E+06
x(M)	8.2800	8.4600	0.0000	0.0000	6.8400	7.0200	8.4600	8.6400	18.000	0.0000	0.0000
2	-1.1956E-05	-4.6795E-07	-277.09	-16.315	-66.938	-2.6112	-23.730	-0.9401	1381.4	7.8279E+06	7.8279E+06
x(M)	8.8200	8.8200	0.0000	0.0000	7.2000	7.2000	9.0000	9.0000	18.000	0.0000	0.0000
3	-1.1917E-05	-4.8499E-07	-278.04	-17.125	-67.234	-2.7260	-23.861	-0.9831	1075.6	7.8279E+06	7.8279E+06
x(M)	8.8200	8.8200	0.0000	0.0000	7.0200	7.2000	9.0000	9.0000	18.000	0.0000	0.0000
4	-1.0902E-05	-4.1177E-07	-311.06	-16.985	-79.003	-2.9741	-29.156	-1.1126	1682.6	7.8279E+06	7.8279E+06
x(M)	8.2800	8.4600	0.0000	0.0000	6.8400	7.0200	8.4600	8.6400	18.000	0.0000	0.0000
5	-1.2452E-05	-4.8764E-07	-260.73	-15.637	-61.721	-2.4064	-21.384	-0.8366	1376.8	7.8279E+06	7.8279E+06
x(M)	9.0000	9.1800	0.0000	0.0000	7.2000	7.3800	9.0000	9.0000	18.000	0.0000	0.0000
6	-1.2445E-05	-5.0641E-07	-260.81	-16.380	-61.738	-2.5006	-21.394	-0.8695	1071.0	7.8279E+06	7.8279E+06
x(M)	9.0000	9.1800	0.0000	0.0000	7.2000	7.3800	9.0000	9.0000	18.000	0.0000	0.0000
7	-1.0889E-05	-4.1188E-07	-310.30	-16.988	-78.905	-2.9748	-29.117	-1.1127	1678.0	7.8279E+06	7.8279E+06
x(M)	8.2800	8.4600	0.0000	0.0000	6.8400	7.0200	8.4600	8.6400	18.000	0.0000	0.0000
8	-1.2444E-05	-4.8804E-07	-259.84	-15.630	-61.573	-2.4041	-21.323	-0.8353	1372.2	7.8279E+06	7.8279E+06
x(M)	9.0000	9.1800	0.0000	0.0000	7.2000	7.3800	9.0000	9.0000	18.000	0.0000	0.0000
9	-1.2436E-05	-5.0683E-07	-259.92	-16.373	-61.589	-2.4981	-21.333	-0.8682	1066.4	7.8279E+06	7.8279E+06
x(M)	9.0000	9.1800	0.0000	0.0000	7.2000	7.3800	9.0000	9.0000	18.000	0.0000	0.0000
10	-1.0876E-05	-4.1199E-07	-309.54	-16.991	-78.809	-2.9755	-29.079	-1.1130	1673.4	7.8279E+06	7.8279E+06
x(M)	8.2800	8.4600	0.0000	0.0000	6.8400	7.0200	8.4600	8.6400	18.000	0.0000	0.0000
11	-1.2420E-05	-4.8783E-07	-259.37	-15.642	-61.566	-2.4074	-21.327	-0.8369	1367.6	7.8279E+06	7.8279E+06
x(M)	9.0000	9.1800	0.0000	0.0000	7.2000	7.3800	9.0000	9.0000	18.000	0.0000	0.0000
12	-1.2412E-05	-5.0660E-07	-259.45	-16.385	-61.583	-2.5016	-21.336	-0.8699	1061.8	7.8279E+06	7.8279E+06
x(M)	9.0000	9.1800	0.0000	0.0000	7.2000	7.3800	9.0000	9.0000	18.000	0.0000	0.0000
13	-1.0665E-05	-4.0372E-07	-316.78	-17.324	-81.587	-3.0818	-30.426	-1.1635	1668.8	7.8279E+06	7.8279E+06
x(M)	8.2800	8.4600	0.0000	0.0000	6.8400	7.0200	8.4600	8.6400	18.000	0.0000	0.0000
14	-1.1896E-05	-4.6848E-07	-274.21	-16.324	-66.569	-2.6128	-23.587	-0.9403	1363.0	7.8279E+06	7.8279E+06
x(M)	8.8200	8.8200	0.0000	0.0000	7.2000	7.2000	9.0000	9.0000	18.000	0.0000	0.0000
15	-1.1857E-05	-4.8553E-07	-275.16	-17.134	-66.885	-2.7276	-23.717	-0.9832	1057.2	7.8279E+06	7.8279E+06
x(M)	8.8200	8.8200	0.0000	0.0000	7.0200	7.2000	9.0000	9.0000	18.000	0.0000	0.0000
Min.	-1.2452E-05	-5.0683E-07	-319.90	-17.324	-82.008	-3.0818	-30.597	-1.1635	1057.2	7.8279E+06	7.8279E+06
Pile N.	5	9	1	13	1	13	1	15	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	z-DIR	y-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		
1	5.7437E-04	1.9757E-05	245.92	9.1453	141.07	6.3576	120.80	4.9010	2654.0	7.8279E+06	7.8279E+06

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	
COMMESSA <b>IF28</b> LOTTO <b>01</b> CODIFICA <b>E ZZ CL</b> DOCUMENTO <b>VI0403 001</b> REV. <b>B</b> FOGLIO <b>170 di 354</b>	

x (M)	0.0000	0.0000	5.0400	5.2200	0.0000	0.0000	4.1400	4.1400	0.0000	0.0000	0.0000
2	5.7437E-04	2.0505E-05	218.95	8.4561	118.57	5.6955	89.551	3.8034	2219.1	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	5.2200	5.5800	0.0000	0.0000	4.1400	4.1400	0.0000	0.0000	0.0000
3	5.7437E-04	2.1254E-05	219.55	8.8073	119.11	5.9657	90.203	3.9867	1916.3	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	5.2200	5.5800	0.0000	0.0000	4.1400	4.1400	0.0000	0.0000	0.0000
4	5.7362E-04	1.9757E-05	240.43	8.9504	136.45	6.1832	114.37	4.6514	2622.7	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	5.0400	5.2200	0.0000	0.0000	4.1400	4.1400	0.0000	0.0000	0.0000
5	5.7362E-04	2.0505E-05	208.77	8.0835	110.47	5.3614	79.353	3.3822	2165.1	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	5.4000	5.5800	0.0000	0.0000	4.1400	4.1400	0.0000	0.0000	0.0000
6	5.7362E-04	2.1254E-05	208.82	8.3984	110.57	5.5984	79.420	3.5230	1859.7	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	5.4000	5.5800	0.0000	0.0000	4.1400	4.1400	0.0000	0.0000	0.0000
7	5.7287E-04	1.9757E-05	240.13	8.9525	136.20	6.1844	114.25	4.6544	2615.9	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	5.0400	5.2200	0.0000	0.0000	4.1400	4.1400	0.0000	0.0000	0.0000
8	5.7287E-04	2.0505E-05	208.38	8.0799	110.16	5.3581	79.136	3.3789	2157.8	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	5.4000	5.5800	0.0000	0.0000	4.1400	4.1400	0.0000	0.0000	0.0000
9	5.7287E-04	2.1254E-05	208.42	8.3947	110.26	5.5949	79.201	3.5195	1852.4	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	5.4000	5.5800	0.0000	0.0000	4.1400	4.1400	0.0000	0.0000	0.0000
10	5.7212E-04	1.9757E-05	239.84	8.9547	135.95	6.1858	114.13	4.6574	2609.0	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	5.0400	5.2200	0.0000	0.0000	4.1400	4.1400	0.0000	0.0000	0.0000
11	5.7212E-04	2.0505E-05	208.24	8.0869	110.06	5.3637	79.181	3.3866	2151.8	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	5.4000	5.5800	0.0000	0.0000	4.1400	4.1400	0.0000	0.0000	0.0000
12	5.7212E-04	2.1254E-05	208.29	8.4019	110.15	5.6008	79.246	3.5276	1846.4	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	5.4000	5.5800	0.0000	0.0000	4.1400	4.1400	0.0000	0.0000	0.0000
13	5.7137E-04	1.9757E-05	244.68	9.1532	140.03	6.3621	120.26	4.9125	2626.2	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	5.0400	5.2200	0.0000	0.0000	4.1400	4.1400	0.0000	0.0000	0.0000
14	5.7137E-04	2.0505E-05	217.82	8.4614	117.66	5.6990	89.121	3.8115	2192.1	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	5.2200	5.5800	0.0000	0.0000	4.1400	4.1400	0.0000	0.0000	0.0000
15	5.7137E-04	2.1254E-05	218.42	8.8133	118.20	5.9694	89.770	3.9951	1889.3	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	5.2200	5.4000	0.0000	0.0000	4.1400	4.1400	0.0000	0.0000	0.0000
Max.	5.7437E-04	2.1254E-05	245.92	9.1532	141.07	6.3621	120.80	4.9125	2654.0	7.8279E+06	7.8279E+06
Pile N.	1	3	1	13	1	13	1	1	1		

LOAD CASE : 19  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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	0.8543	1.0000
2	0.7956	1.0000
3	0.8661	1.0000
4	0.5752	1.0000
5	0.4961	1.0000
6	0.5923	1.0000
7	0.5421	1.0000
8	0.4641	1.0000
9	0.5602	1.0000
10	0.5421	1.0000
11	0.4642	1.0000
12	0.5602	1.0000
13	0.5845	1.0000
14	0.5010	1.0000
15	0.6016	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*







VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
31672.5	-3499.85	15576.7
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
5867.83	54882.8	-888.974

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
1.22604E-03	-1.29667E-03	5.68020E-03
ANGLE ROT. X,RAD	ANGLE ROT. Y,RAD	ANGLE ROT. Z,RAD
3.01870E-05	1.05948E-04	3.34479E-05

THE GLOBAL STRUCTURAL COORDINATE SYSTEM

\* PILE TOP DISPLACEMENTS \*

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	
COMMESSA <b>IF28</b> LOTTO <b>01</b> CODIFICA <b>E ZZ CL</b> DOCUMENTO <b>VI0403 001</b> REV. <b>B</b> FOGLIO <b>171 di 354</b>	

PILE GROUP DISP. X, M DISP. Y, M DISP. Z, M ROT. X,RAD ROT. Y,RAD ROT. Z,RAD

1	2.0291E-03	-1.5684E-03	5.8160E-03	3.0187E-05	1.0595E-04	3.3448E-05
2	2.1796E-03	-1.5684E-03	5.6802E-03	3.0187E-05	1.0595E-04	3.3448E-05
3	2.3301E-03	-1.5684E-03	5.5444E-03	3.0187E-05	1.0595E-04	3.3448E-05
4	1.5523E-03	-1.4325E-03	5.8160E-03	3.0187E-05	1.0595E-04	3.3448E-05
5	1.7028E-03	-1.4325E-03	5.6802E-03	3.0187E-05	1.0595E-04	3.3448E-05
6	1.8533E-03	-1.4325E-03	5.5444E-03	3.0187E-05	1.0595E-04	3.3448E-05
7	1.0755E-03	-1.2967E-03	5.8160E-03	3.0187E-05	1.0595E-04	3.3448E-05
8	1.2260E-03	-1.2967E-03	5.6802E-03	3.0187E-05	1.0595E-04	3.3448E-05
9	1.3766E-03	-1.2967E-03	5.5444E-03	3.0187E-05	1.0595E-04	3.3448E-05
10	5.9876E-04	-1.1608E-03	5.8160E-03	3.0187E-05	1.0595E-04	3.3448E-05
11	7.4927E-04	-1.1608E-03	5.6802E-03	3.0187E-05	1.0595E-04	3.3448E-05
12	8.9979E-04	-1.1608E-03	5.5444E-03	3.0187E-05	1.0595E-04	3.3448E-05
13	1.2199E-04	-1.0250E-03	5.8160E-03	3.0187E-05	1.0595E-04	3.3448E-05
14	2.7251E-04	-1.0250E-03	5.6802E-03	3.0187E-05	1.0595E-04	3.3448E-05
15	4.2302E-04	-1.0250E-03	5.5444E-03	3.0187E-05	1.0595E-04	3.3448E-05

MINIMUM	1.2199E-04	-1.5684E-03	5.5444E-03	3.0187E-05	1.0595E-04	3.3448E-05
Pile N.	13	3	1	1	1	1
MAXIMUM	2.3301E-03	-1.0250E-03	5.8160E-03	3.0187E-05	1.0595E-04	3.3448E-05
Pile N.	3	13	1	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP FOR. X, KN FOR. Y, KN FOR. Z, KN MOM X, KN- M MOM Y, KN- M MOM Z, KN- M

1	3499.8	-344.70	1292.6	10.061	-4188.3	-1110.4
2	3658.0	-333.90	1221.1	10.061	-3991.5	-1085.9
3	3816.1	-352.21	1255.0	10.061	-4032.3	-1127.0
4	2706.7	-249.17	1031.9	10.061	-3569.7	-852.82
5	2968.2	-230.83	932.53	10.061	-3296.8	-807.88
6	3229.7	-259.71	1021.6	10.061	-3492.2	-880.11
7	1878.4	-216.51	1000.4	10.061	-3491.6	-743.51
8	2139.9	-199.67	900.27	10.061	-3214.9	-701.86
9	2401.4	-226.25	992.86	10.061	-3421.5	-768.85
10	1050.1	-191.91	1002.5	10.061	-3495.3	-653.86
11	1311.6	-176.95	902.28	10.061	-3218.5	-616.92
12	1573.0	-200.59	995.02	10.061	-3425.3	-676.39
13	214.96	-174.50	1047.6	10.061	-3603.3	-581.65
14	480.18	-160.98	943.72	10.061	-3320.3	-548.77
15	744.74	-181.97	1037.2	10.061	-3525.5	-600.86

MINIMUM	214.96	-352.21	900.27	10.061	-4188.3	-1127.0
Pile N.	13	3	8	1	1	3
MAXIMUM	3816.1	-160.98	1292.6	10.061	-3214.9	-548.77
Pile N.	3	14	1	1	8	14

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	2.0291E-03	-1.5684E-03	5.8160E-03	3.0187E-05	1.0595E-04	3.3448E-05
2	2.1796E-03	-1.5684E-03	5.6802E-03	3.0187E-05	1.0595E-04	3.3448E-05
3	2.3301E-03	-1.5684E-03	5.5444E-03	3.0187E-05	1.0595E-04	3.3448E-05
4	1.5523E-03	-1.4325E-03	5.8160E-03	3.0187E-05	1.0595E-04	3.3448E-05
5	1.7028E-03	-1.4325E-03	5.6802E-03	3.0187E-05	1.0595E-04	3.3448E-05
6	1.8533E-03	-1.4325E-03	5.5444E-03	3.0187E-05	1.0595E-04	3.3448E-05
7	1.0755E-03	-1.2967E-03	5.8160E-03	3.0187E-05	1.0595E-04	3.3448E-05
8	1.2260E-03	-1.2967E-03	5.6802E-03	3.0187E-05	1.0595E-04	3.3448E-05
9	1.3766E-03	-1.2967E-03	5.5444E-03	3.0187E-05	1.0595E-04	3.3448E-05
10	5.9876E-04	-1.1608E-03	5.8160E-03	3.0187E-05	1.0595E-04	3.3448E-05
11	7.4927E-04	-1.1608E-03	5.6802E-03	3.0187E-05	1.0595E-04	3.3448E-05
12	8.9979E-04	-1.1608E-03	5.5444E-03	3.0187E-05	1.0595E-04	3.3448E-05
13	1.2199E-04	-1.0250E-03	5.8160E-03	3.0187E-05	1.0595E-04	3.3448E-05
14	2.7251E-04	-1.0250E-03	5.6802E-03	3.0187E-05	1.0595E-04	3.3448E-05
15	4.2302E-04	-1.0250E-03	5.5444E-03	3.0187E-05	1.0595E-04	3.3448E-05

MINIMUM	1.2199E-04	-1.5684E-03	5.5444E-03	3.0187E-05	1.0595E-04	3.3448E-05
Pile N.	13	3	1	1	1	1
MAXIMUM	2.3301E-03	-1.0250E-03	5.8160E-03	3.0187E-05	1.0595E-04	3.3448E-05
Pile N.	3	13	1	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP AXIAL, KN LAT. y, KN LAT. z, KN MOM x, KN- M MOM y, KN- M MOM z, KN- M

1	3499.8	-344.70	1292.6	10.061	-4188.3	-1110.4
2	3658.0	-333.90	1221.1	10.061	-3991.5	-1085.9
3	3816.1	-352.21	1255.0	10.061	-4032.3	-1127.0
4	2706.7	-249.17	1031.9	10.061	-3569.7	-852.82
5	2968.2	-230.83	932.53	10.061	-3296.8	-807.88
6	3229.7	-259.71	1021.6	10.061	-3492.2	-880.11
7	1878.4	-216.51	1000.4	10.061	-3491.6	-743.51
8	2139.9	-199.67	900.27	10.061	-3214.9	-701.86
9	2401.4	-226.25	992.86	10.061	-3421.5	-768.85

<b>APPALTATORE:</b> Consorzio Soci   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria Mandanti   	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	
COMMESSA <b>IF28</b> LOTTO <b>01</b> CODIFICA <b>E ZZ CL</b> DOCUMENTO <b>VI0403 001</b> REV. <b>B</b> FOGLIO <b>172 di 354</b>	

10	1050.1	-191.91	1002.5	10.061	-3495.3	-653.86
11	1311.6	-176.95	902.28	10.061	-3218.5	-616.92
12	1573.0	-200.59	995.02	10.061	-3425.3	-676.39
13	214.96	-174.50	1047.6	10.061	-3603.3	-581.65
14	480.18	-160.98	943.72	10.061	-3320.3	-548.77
15	744.74	-181.97	1037.2	10.061	-3525.5	-600.86

MINIMUM	214.96	-352.21	900.27	10.061	-4188.3	-1127.0
Pile N.	13	3	8	1	1	3
MAXIMUM	3816.1	-160.98	1292.6	10.061	-3214.9	-548.77
Pile N.	3	14	1	1	8	14

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

1	1.5058E+04
2	1.4554E+04
3	1.4796E+04
4	1.2609E+04
5	1.1924E+04
6	1.2697E+04
7	1.1837E+04
8	1.1142E+04
9	1.1943E+04
10	1.1326E+04
11	1.0633E+04
12	1.1428E+04
13	1.1137E+04
14	1.0428E+04
15	1.1215E+04

MINIMUM	1.0428E+04
Pile N.	14
MAXIMUM	1.5058E+04
Pile N.	1







\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL.		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	KN- M**2			
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2	KN- M**2	KN- M**2	KN- M**2			
1	-1.5683E-03	-9.2384E-05	-442.23	-4188.3	-344.75	-445.44	-134.71	-118.17	1980.5	7.8279E+06	7.8279E+06	0.0000	0.0000		
x(M)	0.0000	10.620	6.8400	0.0000	0.0000	9.0000	4.1400	10.800	18.000	0.0000	0.0000	0.0000			
2	-1.5683E-03	-9.0753E-05	-430.90	-3991.5	-333.94	-419.58	-127.92	-109.38	2070.0	7.8279E+06	7.8279E+06	0.0000	0.0000		
x(M)	0.0000	10.620	6.8400	0.0000	0.0000	9.0000	4.1400	10.980	18.000	0.0000	0.0000	0.0000			
3	-1.5683E-03	-8.8245E-05	-449.35	-4032.3	-352.26	-435.60	-139.01	-116.61	2159.5	7.8279E+06	7.8279E+06	0.0000	0.0000		
x(M)	0.0000	10.440	6.8400	0.0000	0.0000	8.8200	4.1400	10.800	18.000	0.0000	0.0000	0.0000			
4	-1.4325E-03	-8.8667E-05	-332.30	-3569.7	-249.20	-329.20	-86.522	-79.107	1531.7	7.8279E+06	7.8279E+06	0.0000	0.0000		
x(M)	0.0000	11.520	6.8400	0.0000	0.0000	9.7200	4.1400	11.700	18.000	0.0000	0.0000	0.0000			
5	-1.4325E-03	-8.8608E-05	-312.56	-3296.8	-230.86	-294.37	-76.662	-68.159	1679.6	7.8279E+06	7.8279E+06	0.0000	0.0000		
x(M)	0.0000	11.880	7.2000	0.0000	0.0000	10.080	4.1400	12.060	18.000	0.0000	0.0000	0.0000			
6	-1.4325E-03	-9.0067E-05	-347.13	-3492.2	-259.74	-336.45	-91.122	-81.907	1827.6	7.8279E+06	7.8279E+06	0.0000	0.0000		
x(M)	0.0000	11.340	6.8400	0.0000	0.0000	9.5400	4.1400	11.700	18.000	0.0000	0.0000	0.0000			
7	-1.2967E-03	-8.9452E-05	-292.46	-3491.6	-216.53	-317.47	-74.049	-75.052	1062.9	7.8279E+06	7.8279E+06	0.0000	0.0000		
x(M)	0.0000	11.700	7.0200	0.0000	0.0000	9.9000	4.1400	11.880	18.000	0.0000	0.0000	0.0000			
8	-1.2967E-03	-8.9637E-05	-274.22	-3214.9	-199.69	-282.10	-65.168	-64.533	1210.9	7.8279E+06	7.8279E+06	0.0000	0.0000		
x(M)	0.0000	12.060	7.2000	0.0000	0.0000	10.080	4.1400	14.040	18.000	0.0000	0.0000	0.0000			
9	-1.2967E-03	-9.0147E-05	-305.85	-3421.5	-226.27	-323.75	-78.287	-77.840	1358.9	7.8279E+06	7.8279E+06	0.0000	0.0000		
x(M)	0.0000	11.520	6.8400	0.0000	0.0000	9.7200	4.1400	11.880	18.000	0.0000	0.0000	0.0000			
10	-1.1608E-03	-8.9328E-05	-261.13	-3495.3	-191.92	-317.74	-65.954	-75.179	594.21	7.8279E+06	7.8279E+06	0.0000	0.0000		
x(M)	0.0000	11.700	7.0200	0.0000	0.0000	9.9000	4.1400	11.880	18.000	0.0000	0.0000	0.0000			
11	-1.1608E-03	-8.9502E-05	-244.86	-3218.5	-176.96	-282.43	-58.047	-64.559	742.19	7.8279E+06	7.8279E+06	0.0000	0.0000		
x(M)	0.0000	12.060	7.2000	0.0000	0.0000	10.080	4.1400	14.040	18.000	0.0000	0.0000	0.0000			
12	-1.1608E-03	-9.0026E-05	-273.14	-3425.3	-200.60	-324.03	-69.741	-77.980	890.16	7.8279E+06	7.8279E+06	0.0000	0.0000		
x(M)	0.0000	11.520	6.8400	0.0000	0.0000	9.7200	4.1400	11.880	18.000	0.0000	0.0000	0.0000			
13	-1.0250E-03	-8.8204E-05	-237.78	-3603.3	-174.50	-333.86	-61.792	-80.690	121.64	7.8279E+06	7.8279E+06	0.0000	0.0000		
x(M)	0.0000	11.520	6.8400	0.0000	0.0000	9.7200	4.1400	11.700	18.000	0.0000	0.0000	0.0000			
14	-1.0250E-03	-8.8101E-05	-223.00	-3320.3	-160.98	-296.85	-54.456	-69.119	271.73	7.8279E+06	7.8279E+06	0.0000	0.0000		
x(M)	0.0000	11.880	7.0200	0.0000	0.0000	10.080	4.1400	12.060	18.000	0.0000	0.0000	0.0000			
15	-1.0250E-03	-8.9915E-05	-248.07	-3525.5	-181.97	-341.82	-65.088	-83.727	421.44	7.8279E+06	7.8279E+06	0.0000	0.0000		
x(M)	0.0000	11.340	6.8400	0.0000	0.0000	9.5400	4.1400	11.520	18.000	0.0000	0.0000	0.0000			
Min.	-1.5683E-03	-9.2384E-05	-449.35	-4188.3	-352.26	-445.44	-139.01	-118.17	121.64	7.8279E+06	7.8279E+06	0.0000	0.0000		
Pile N.	1	1	3	1	3	1	3	1	13	1	1	1	1		

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL.		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	KN- M**2			
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2	KN- M**2	KN- M**2	KN- M**2			
1	2.4782E-05	5.8160E-03	1110.4	1646.0	119.43	1292.8	31.684	503.14	1.5058E+04	7.8279E+06	7.8279E+06	0.0000	0.0000		
x(M)	10.620	0.0000	0.0000	6.8400	9.0000	0.0000	10.800	4.1400	0.0000	0.0000	0.0000	0.0000			
2	2.4950E-05	5.6802E-03	1085.9	1565.4	115.31	1221.2	30.045	466.18	1.4554E+04	7.8279E+06	7.8279E+06	0.0000	0.0000		
x(M)	10.620	0.0000	0.0000	6.8400	9.0000	0.0000	10.980	4.1400	0.0000	0.0000	0.0000	0.0000			
3	2.4874E-05	5.5444E-03	1127.0	1592.9	122.75	1255.2	32.847	493.93	1.4796E+04	7.8279E+06	7.8279E+06	0.0000	0.0000		
x(M)	10.440	0.0000	0.0000	6.8400	8.8200	0.0000	10.800	4.1400	0.0000	0.0000	0.0000	0.0000			
4	2.1646E-05	5.8160E-03	852.82	1357.5	80.396	1032.0	19.293	355.62	1.2609E+04	7.8279E+06	7.8279E+06	0.0000	0.0000		

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	
COMMESSA <b>IF28</b> LOTTO <b>01</b> CODIFICA <b>E ZZ CL</b> DOCUMENTO <b>VI0403 001</b> REV. <b>B</b> FOGLIO <b>173 di 354</b>	

x(M)	11.520	0.0000	0.0000	7.0200	9.7200	0.0000	11.700	4.1400	0.0000	0.0000	0.0000
5	2.2156E-05	5.6802E-03	807.88	1246.5	73.581	932.64	17.028	307.45	1.1924E+04	7.8279E+06	7.8279E+06
x(M)	11.880	0.0000	0.0000	7.2000	10.080	0.0000	12.060	4.1400	0.0000	0.0000	0.0000
6	2.3103E-05	5.5444E-03	880.11	1350.2	86.265	1021.8	20.981	356.25	1.2697E+04	7.8279E+06	7.8279E+06
x(M)	11.340	0.0000	0.0000	6.8400	9.5400	0.0000	11.700	4.1400	0.0000	0.0000	0.0000
7	1.9672E-05	5.8160E-03	743.51	1323.2	69.812	1000.5	16.482	338.26	1.1837E+04	7.8279E+06	7.8279E+06
x(M)	11.700	0.0000	0.0000	7.0200	9.9000	0.0000	11.880	4.1400	0.0000	0.0000	0.0000
8	2.0188E-05	5.6802E-03	701.86	1211.1	63.613	900.35	14.462	290.49	1.1142E+04	7.8279E+06	7.8279E+06
x(M)	12.060	0.0000	0.0000	7.2000	10.080	0.0000	12.240	4.1400	0.0000	0.0000	0.0000
9	2.0852E-05	5.5444E-03	768.85	1318.3	74.767	992.96	17.963	340.14	1.1943E+04	7.8279E+06	7.8279E+06
x(M)	11.340	0.0000	0.0000	7.0200	9.5400	0.0000	11.700	4.1400	0.0000	0.0000	0.0000
10	1.7490E-05	5.8160E-03	653.86	1324.4	62.205	1002.6	14.690	339.02	1.1326E+04	7.8279E+06	7.8279E+06
x(M)	11.700	0.0000	0.0000	7.0200	9.9000	0.0000	11.880	4.1400	0.0000	0.0000	0.0000
11	1.7941E-05	5.6802E-03	616.92	1212.2	56.715	902.32	12.888	291.18	1.0633E+04	7.8279E+06	7.8279E+06
x(M)	12.060	0.0000	0.0000	7.2000	10.080	0.0000	12.240	4.1400	0.0000	0.0000	0.0000
12	1.8558E-05	5.5444E-03	676.39	1319.5	66.670	995.08	16.017	340.94	1.1428E+04	7.8279E+06	7.8279E+06
x(M)	11.340	0.0000	0.0000	7.0200	9.5400	0.0000	11.700	4.1400	0.0000	0.0000	0.0000
13	1.5149E-05	5.8160E-03	581.65	1370.3	57.388	1047.6	13.830	363.03	1.1137E+04	7.8279E+06	7.8279E+06
x(M)	11.520	0.0000	0.0000	6.8400	9.7200	0.0000	11.520	4.1400	0.0000	0.0000	0.0000
14	1.5487E-05	5.6802E-03	548.77	1255.0	52.242	943.74	12.132	312.26	1.0428E+04	7.8279E+06	7.8279E+06
x(M)	11.880	0.0000	0.0000	7.2000	9.9000	0.0000	11.880	4.1400	0.0000	0.0000	0.0000
15	1.6260E-05	5.5444E-03	600.86	1363.8	61.599	1037.3	15.075	363.66	1.1215E+04	7.8279E+06	7.8279E+06
x(M)	11.160	0.0000	0.0000	6.8400	9.5400	0.0000	11.520	4.1400	0.0000	0.0000	0.0000
Max.	2.4950E-05	5.8160E-03	1127.0	1646.0	122.75	1292.8	32.847	503.14	1.5058E+04	7.8279E+06	7.8279E+06
Pile N.	2	1	3	1	3	1	3	1	1	1	1

LOAD CASE : 20  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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	0.5012	1.0000
3	0.6023	1.0000
4	0.5420	1.0000
5	0.4643	1.0000
6	0.5609	1.0000
7	0.5420	1.0000
8	0.4642	1.0000
9	0.5609	1.0000
10	0.5751	1.0000
11	0.4961	1.0000
12	0.5929	1.0000
13	0.8538	1.0000
14	0.7952	1.0000
15	0.8661	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
27688.8	-3499.85	-15401.8
MOMENT X, KN-M	MOMENT Y, KN-M	MOMENT Z, KN-M
-5909.51	-53198.5	776.794

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
1.06166E-03	-1.30068E-03	-5.56964E-03
ANGLE ROT. X,RAD	ANGLE ROT. Y,RAD	ANGLE ROT. Z,RAD
-3.01267E-05	-1.01061E-04	3.66925E-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	-1.3002E-05	-1.0295E-03	-5.7052E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
2	1.5211E-04	-1.0295E-03	-5.5696E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
3	3.1723E-04	-1.0295E-03	-5.4341E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
4	4.4177E-04	-1.1651E-03	-5.7052E-03	-3.0127E-05	-1.0106E-04	3.6693E-05

<b>APPALTATORE:</b> Consorzio  Soci  	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>											
<b>PROGETTAZIONE:</b> Mandataria  Mandanti  												
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>												
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">COMMESSA</td> <td style="width: 10%;">LOTTO</td> <td style="width: 15%;">CODIFICA</td> <td style="width: 15%;">DOCUMENTO</td> <td style="width: 10%;">REV.</td> <td style="width: 10%;">FOGLIO</td> </tr> <tr> <td>IF28</td> <td>01</td> <td>E ZZ CL</td> <td>VI0403 001</td> <td>B</td> <td>174 di 354</td> </tr> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF28	01	E ZZ CL	VI0403 001	B	174 di 354
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO							
IF28	01	E ZZ CL	VI0403 001	B	174 di 354							

5	6.0689E-04	-1.1651E-03	-5.5696E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
6	7.7200E-04	-1.1651E-03	-5.4341E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
7	8.9655E-04	-1.3007E-03	-5.7052E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
8	1.0617E-03	-1.3007E-03	-5.5696E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
9	1.2288E-03	-1.3007E-03	-5.4341E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
10	1.3513E-03	-1.4363E-03	-5.7052E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
11	1.5164E-03	-1.4363E-03	-5.5696E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
12	1.6815E-03	-1.4363E-03	-5.4341E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
13	1.8061E-03	-1.5718E-03	-5.7052E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
14	1.9712E-03	-1.5718E-03	-5.5696E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
15	2.1363E-03	-1.5718E-03	-5.4341E-03	-3.0127E-05	-1.0106E-04	3.6693E-05

MINIMUM	-1.3002E-05	-1.5718E-03	-5.7052E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
Pile N.	1	13	1	1	1	1
MAXIMUM	2.1363E-03	-1.0295E-03	-5.4341E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
Pile N.	15	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP FOR. X, KN FOR. Y, KN FOR. Z, KN MOM X, KN- M MOM Y, KN- M MOM Z, KN- M

1	-21.322	-176.02	-1046.4	-10.041	3592.6	-581.13
2	268.04	-160.66	-932.72	-10.041	3278.4	-542.57
3	558.99	-181.79	-1025.1	-10.041	3480.4	-594.83
4	777.32	-191.61	-990.78	-10.041	3451.2	-647.58
5	1064.2	-176.67	-891.65	-10.041	3177.7	-610.81
6	1351.0	-200.49	-983.41	-10.041	3381.4	-670.52
7	1567.4	-216.29	-988.68	-10.041	3447.4	-737.32
8	1854.3	-199.48	-889.65	-10.041	3174.0	-695.87
9	2141.1	-226.26	-981.26	-10.041	3377.6	-763.14
10	2357.5	-249.03	-1019.7	-10.041	3524.2	-846.69
11	2644.4	-230.71	-921.39	-10.041	3254.4	-801.93
12	2931.2	-259.81	-1009.5	-10.041	3447.0	-874.52
13	3147.6	-344.71	-1276.7	-10.041	4132.9	-1104.1
14	3434.5	-333.91	-1205.7	-10.041	3937.7	-1079.8
15	3612.5	-352.40	-1239.1	-10.041	3977.2	-1121.1

MINIMUM	-21.322	-352.40	-1276.7	-10.041	3174.0	-1121.1
Pile N.	1	15	13	1	8	15
MAXIMUM	3612.5	-160.66	-889.65	-10.041	4132.9	-542.57
Pile N.	15	2	8	1	13	2

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	-1.3002E-05	-1.0295E-03	-5.7052E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
2	1.5211E-04	-1.0295E-03	-5.5696E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
3	3.1723E-04	-1.0295E-03	-5.4341E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
4	4.4177E-04	-1.1651E-03	-5.7052E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
5	6.0689E-04	-1.1651E-03	-5.5696E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
6	7.7200E-04	-1.1651E-03	-5.4341E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
7	8.9655E-04	-1.3007E-03	-5.7052E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
8	1.0617E-03	-1.3007E-03	-5.5696E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
9	1.2288E-03	-1.3007E-03	-5.4341E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
10	1.3513E-03	-1.4363E-03	-5.7052E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
11	1.5164E-03	-1.4363E-03	-5.5696E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
12	1.6815E-03	-1.4363E-03	-5.4341E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
13	1.8061E-03	-1.5718E-03	-5.7052E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
14	1.9712E-03	-1.5718E-03	-5.5696E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
15	2.1363E-03	-1.5718E-03	-5.4341E-03	-3.0127E-05	-1.0106E-04	3.6693E-05

MINIMUM	-1.3002E-05	-1.5718E-03	-5.7052E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
Pile N.	1	13	1	1	1	1
MAXIMUM	2.1363E-03	-1.0295E-03	-5.4341E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
Pile N.	15	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP AXIAL, KN LAT. y, KN LAT. z, KN MOM x, KN- M MOM y, KN- M MOM z, KN- M

1	-21.322	-176.02	-1046.4	-10.041	3592.6	-581.13
2	268.04	-160.66	-932.72	-10.041	3278.4	-542.57
3	558.99	-181.79	-1025.1	-10.041	3480.4	-594.83
4	777.32	-191.61	-990.78	-10.041	3451.2	-647.58
5	1064.2	-176.67	-891.65	-10.041	3177.7	-610.81
6	1351.0	-200.49	-983.41	-10.041	3381.4	-670.52
7	1567.4	-216.29	-988.68	-10.041	3447.4	-737.32
8	1854.3	-199.48	-889.65	-10.041	3174.0	-695.87
9	2141.1	-226.26	-981.26	-10.041	3377.6	-763.14
10	2357.5	-249.03	-1019.7	-10.041	3524.2	-846.69
11	2644.4	-230.71	-921.39	-10.041	3254.4	-801.93
12	2931.2	-259.81	-1009.5	-10.041	3447.0	-874.52
13	3147.6	-344.71	-1276.7	-10.041	4132.9	-1104.1
14	3434.5	-333.91	-1205.7	-10.041	3937.7	-1079.8
15	3612.5	-352.40	-1239.1	-10.041	3977.2	-1121.1

<b>APPALTATORE:</b> Consorzio <span style="margin-left: 150px;">Soci</span> 		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <span style="margin-left: 100px;">Mandanti</span> 							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>		COMMESSA <b>IF28</b>	LOTTO <b>01</b>	CODIFICA <b>E ZZ CL</b>	DOCUMENTO <b>VI0403 001</b>	REV. <b>B</b>	FOGLIO <b>175 di 354</b>

MINIMUM	-21.322	-352.40	-1276.7	-10.041	3174.0	-1121.1
Pile N.	1	15	13	1	8	15
MAXIMUM	3612.5	-160.66	-889.65	-10.041	4132.9	-542.57
Pile N.	15	2	8	1	13	2

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

1	1.0996E+04
2	1.0181E+04
3	1.0973E+04
4	1.1037E+04
5	1.0368E+04
6	1.1169E+04
7	1.1527E+04
8	1.0856E+04
9	1.1662E+04
10	1.2273E+04
11	1.1612E+04
12	1.2391E+04
13	1.4692E+04
14	1.4266E+04
15	1.4515E+04

MINIMUM	1.0181E+04
Pile N.	2
MAXIMUM	1.4692E+04
Pile N.	13







\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL.		MOMENT		SHEAR		SOIL REACT		SOIL REACT		TOTAL	FLEX. RIG.	FLEX. RIG.
	y-Dir	z-Dir	y-Dir	y-Dir	z-Dir	y-Dir	z-Dir	z-Dir	z-Dir	z-Dir			
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2	KN- M**2	KN- M**2		
1	-1.0295E-03	-5.7052E-03	-243.36	-1376.6	-176.02	-1046.4	-62.441	-361.28	12.066	7.8279E+06	7.8279E+06		
x(M)	0.0000	0.0000	6.8400	6.8400	0.0000	0.0000	4.1400	4.1400	18.000	0.0000	0.0000		
2	-1.0295E-03	-5.5696E-03	-224.17	-1236.2	-160.66	-932.73	-54.745	-309.11	151.68	7.8279E+06	7.8279E+06		
x(M)	0.0000	0.0000	7.0200	7.2000	0.0000	0.0000	4.1400	4.1400	18.000	0.0000	0.0000		
3	-1.0295E-03	-5.4341E-03	-249.42	-1343.5	-181.79	-1025.2	-65.493	-360.11	316.32	7.8279E+06	7.8279E+06		
x(M)	0.0000	0.0000	6.6600	6.8400	0.0000	0.0000	4.1400	4.1400	18.000	0.0000	0.0000		
4	-1.1651E-03	-5.7052E-03	-262.21	-1304.7	-191.62	-990.81	-66.264	-335.48	439.87	7.8279E+06	7.8279E+06		
x(M)	0.0000	0.0000	7.0200	7.0200	0.0000	0.0000	4.1400	4.1400	18.000	0.0000	0.0000		
5	-1.1651E-03	-5.5696E-03	-245.94	-1194.0	-176.68	-891.69	-58.346	-288.18	602.20	7.8279E+06	7.8279E+06		
x(M)	0.0000	0.0000	7.2000	7.2000	0.0000	0.0000	4.1400	4.1400	18.000	0.0000	0.0000		
6	-1.1651E-03	-5.4341E-03	-274.54	-1299.5	-200.50	-983.46	-70.179	-337.61	764.53	7.8279E+06	7.8279E+06		
x(M)	0.0000	0.0000	6.8400	7.0200	0.0000	0.0000	4.1400	4.1400	18.000	0.0000	0.0000		
7	-1.3007E-03	-5.7052E-03	-293.59	-1303.5	-216.30	-988.75	-74.400	-334.71	886.97	7.8279E+06	7.8279E+06		
x(M)	0.0000	0.0000	7.0200	7.0200	0.0000	0.0000	4.1400	4.1400	18.000	0.0000	0.0000		
8	-1.3007E-03	-5.5696E-03	-275.35	-1192.9	-199.49	-889.72	-65.505	-287.47	1049.3	7.8279E+06	7.8279E+06		
x(M)	0.0000	0.0000	7.2000	7.2000	0.0000	0.0000	4.1400	4.1400	18.000	0.0000	0.0000		
9	-1.3007E-03	-5.4341E-03	-307.32	-1298.3	-226.28	-981.34	-78.780	-336.79	1211.6	7.8279E+06	7.8279E+06		
x(M)	0.0000	0.0000	6.8400	7.0200	0.0000	0.0000	4.1400	4.1400	18.000	0.0000	0.0000		
10	-1.4363E-03	-5.7052E-03	-333.62	-1337.0	-249.06	-1019.8	-86.923	-351.82	1334.1	7.8279E+06	7.8279E+06		
x(M)	0.0000	0.0000	6.8400	7.0200	0.0000	0.0000	4.1400	4.1400	18.000	0.0000	0.0000		
11	-1.4363E-03	-5.5696E-03	-313.81	-1227.4	-230.74	-921.49	-77.049	-304.19	1496.4	7.8279E+06	7.8279E+06		
x(M)	0.0000	0.0000	7.0200	7.2000	0.0000	0.0000	4.1400	4.1400	18.000	0.0000	0.0000		
12	-1.4363E-03	-5.4341E-03	-348.62	-1329.9	-259.84	-1009.7	-91.673	-352.62	1658.7	7.8279E+06	7.8279E+06		
x(M)	0.0000	0.0000	6.8400	6.8400	0.0000	0.0000	4.1400	4.1400	18.000	0.0000	0.0000		
13	-1.5718E-03	-5.7052E-03	-443.55	-1620.8	-344.75	-1276.8	-135.29	-497.48	1781.2	7.8279E+06	7.8279E+06		
x(M)	0.0000	0.0000	6.4800	6.4800	0.0000	0.0000	4.1400	4.1400	18.000	0.0000	0.0000		
14	-1.5718E-03	-5.5696E-03	-432.35	-1541.1	-333.95	-1205.8	-128.50	-460.85	1943.5	7.8279E+06	7.8279E+06		
x(M)	0.0000	0.0000	6.4800	6.4800	0.0000	0.0000	4.1400	4.1400	18.000	0.0000	0.0000		
15	-1.5718E-03	-5.4341E-03	-450.87	-1567.7	-352.44	-1239.2	-139.72	-488.34	2044.3	7.8279E+06	7.8279E+06		
x(M)	0.0000	0.0000	6.3000	6.4800	0.0000	0.0000	4.1400	4.1400	18.000	0.0000	0.0000		
Min.	-1.5718E-03	-5.7052E-03	-450.87	-1620.8	-352.44	-1276.8	-139.72	-497.48	12.066	7.8279E+06	7.8279E+06		
Pile N.	13	1	15	13	15	13	15	13	1	1	1		

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL.		MOMENT		SHEAR		SOIL REACT		SOIL REACT		TOTAL	FLEX. RIG.	FLEX. RIG.
	y-Dir	z-Dir	y-Dir	y-Dir	z-Dir	y-Dir	z-Dir	z-Dir	z-Dir	z-Dir			
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2	KN- M**2	KN- M**2		
1	1.6178E-05	9.2360E-05	581.13	3592.6	59.568	340.66	14.379	82.606	1.0996E+04	7.8279E+06	7.8279E+06		
x(M)	11.340	11.340	0.0000	0.0000	9.5400	9.5400	11.700	11.700	0.0000	0.0000	0.0000		
2	1.5433E-05	8.6301E-05	542.57	3278.4	52.535	292.81	12.221	68.395	1.0181E+04	7.8279E+06	7.8279E+06		
x(M)	11.880	11.880	0.0000	0.0000	9.9000	10.080	11.880	12.060	0.0000	0.0000	0.0000		
3	1.6261E-05	8.8236E-05	594.83	3480.4	62.046	337.71	15.210	83.037	1.0973E+04	7.8279E+06	7.8279E+06		
x(M)	11.160	11.160	0.0000	0.0000	9.3600	9.5400	11.520	11.520	0.0000	0.0000	0.0000		
4	1.7432E-05	8.7538E-05	647.58	3451.2	62.400	313.41	14.783	74.356	1.1037E+04	7.8279E+06	7.8279E+06		
x(M)	11.700	11.700	0.0000	0.0000	9.9000	9.9000	11.700	11.880	0.0000	0.0000	0.0000		
5	1.7874E-05	8.7663E-05	610.81	3177.7	56.992	278.90	12.977	63.729	1.0368E+04	7.8279E+06	7.8279E+06		
x(M)	12.060	12.060	0.0000	0.0000	10.080	10.080	12.060	12.240	0.0000	0.0000	0.0000		
6	1.8527E-05	8.8218E-05	670.52	3381.4	67.050	319.66	16.139	77.208	1.1169E+04	7.8279E+06	7.8279E+06		
x(M)	11.340	11.340	0.0000	0.0000	9.5400	9.5400	11.700	11.700	0.0000	0.0000	0.0000		
7	1.9605E-05	8.7655E-05	737.32	3447.4	70.025	313.12	16.572	74.224	1.1527E+04	7.8279E+06	7.8279E+06		

<b>APPALTATORE:</b> Consorzio  Soci  	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>												
<b>PROGETTAZIONE:</b> Mandataria  Mandanti  													
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	<table border="1"> <tr> <td>COMMESSA</td> <td>LOTTO</td> <td>CODIFICA</td> <td>DOCUMENTO</td> <td>REV.</td> <td>FOGLIO</td> </tr> <tr> <td>IF28</td> <td>01</td> <td>E ZZ CL</td> <td>VI0403 001</td> <td>B</td> <td>176 di 354</td> </tr> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF28	01	E ZZ CL	VI0403 001	B	176 di 354
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO								
IF28	01	E ZZ CL	VI0403 001	B	176 di 354								

x(M)	11.700	11.700	0.0000	0.0000	9.9000	9.9000	11.700	11.880	0.0000	0.0000	0.0000
8	2.0111E-05	8.7789E-05	695.87	3174.0	63.916	278.54	14.549	63.605	1.0856E+04	7.8279E+06	7.8279E+06
x(M)	12.060	12.060	0.0000	0.0000	10.080	10.080	12.060	12.240	0.0000	0.0000	0.0000
9	2.0814E-05	8.8305E-05	763.14	3377.6	75.183	319.27	18.098	77.050	1.1662E+04	7.8279E+06	7.8279E+06
x(M)	11.340	11.340	0.0000	0.0000	9.5400	9.7200	11.700	11.700	0.0000	0.0000	0.0000
10	2.1591E-05	8.6949E-05	846.69	3524.2	80.737	324.97	19.404	78.258	1.2273E+04	7.8279E+06	7.8279E+06
x(M)	11.520	11.520	0.0000	0.0000	9.7200	9.7200	11.700	11.700	0.0000	0.0000	0.0000
11	2.2079E-05	8.6794E-05	801.93	3254.4	73.796	290.26	17.123	67.406	1.1612E+04	7.8279E+06	7.8279E+06
x(M)	11.880	11.880	0.0000	0.0000	10.080	10.080	12.060	12.060	0.0000	0.0000	0.0000
12	2.3066E-05	8.8328E-05	874.52	3447.0	86.706	332.26	21.135	81.115	1.2391E+04	7.8279E+06	7.8279E+06
x(M)	11.340	11.340	0.0000	0.0000	9.5400	9.5400	11.700	11.700	0.0000	0.0000	0.0000
13	2.4716E-05	9.0546E-05	1104.1	4132.9	119.79	439.15	31.858	116.85	1.4692E+04	7.8279E+06	7.8279E+06
x(M)	10.440	10.620	0.0000	0.0000	8.8200	9.0000	10.800	10.800	0.0000	0.0000	0.0000
14	2.4915E-05	8.9033E-05	1079.8	3937.7	115.75	413.94	30.211	108.14	1.4266E+04	7.8279E+06	7.8279E+06
x(M)	10.620	10.620	0.0000	0.0000	9.0000	9.0000	10.980	10.980	0.0000	0.0000	0.0000
15	2.4827E-05	8.6489E-05	1121.1	3977.2	123.26	429.69	33.085	115.35	1.4515E+04	7.8279E+06	7.8279E+06
x(M)	10.440	10.440	0.0000	0.0000	8.8200	8.8200	10.620	10.620	0.0000	0.0000	0.0000
Max.	2.4915E-05	9.2360E-05	1121.1	4132.9	123.26	439.15	33.085	116.85	1.4692E+04	7.8279E+06	7.8279E+06
Pile N.	14	1	15	13	15	13	15	13	1	1	

LOAD CASE : 21  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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	0.5791	1.0000
3	0.5846	1.0000
4	0.8053	1.0000
5	0.4951	1.0000
6	0.4955	1.0000
7	0.8053	1.0000
8	0.4941	1.0000
9	0.4945	1.0000
10	0.8053	1.0000
11	0.4951	1.0000
12	0.4955	1.0000
13	0.8661	1.0000
14	0.5791	1.0000
15	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
31725.3	12049.6	87.4731
MOMENT X, KN-M	MOMENT Y, KN-M	MOMENT Z, KN-M
-28.2345	843.687	-48338.5

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*





VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
1.27440E-03	4.44753E-03	3.01602E-05
ANGLE ROT. X,RAD	ANGLE ROT. Y,RAD	ANGLE ROT. Z,RAD
-4.07398E-07	1.21335E-06	-2.59690E-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	2.4539E-03	4.4512E-03	2.8327E-05	-4.0740E-07	1.2133E-06	-2.5969E-04
2	1.2853E-03	4.4512E-03	3.0160E-05	-4.0740E-07	1.2133E-06	-2.5969E-04
3	1.1672E-04	4.4512E-03	3.1993E-05	-4.0740E-07	1.2133E-06	-2.5969E-04
4	2.4485E-03	4.4494E-03	2.8327E-05	-4.0740E-07	1.2133E-06	-2.5969E-04
5	1.2799E-03	4.4494E-03	3.0160E-05	-4.0740E-07	1.2133E-06	-2.5969E-04
6	1.1126E-04	4.4494E-03	3.1993E-05	-4.0740E-07	1.2133E-06	-2.5969E-04
7	2.4430E-03	4.4475E-03	2.8327E-05	-4.0740E-07	1.2133E-06	-2.5969E-04
8	1.2744E-03	4.4475E-03	3.0160E-05	-4.0740E-07	1.2133E-06	-2.5969E-04
9	1.0580E-04	4.4475E-03	3.1993E-05	-4.0740E-07	1.2133E-06	-2.5969E-04
10	2.4375E-03	4.4457E-03	2.8327E-05	-4.0740E-07	1.2133E-06	-2.5969E-04



<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>											
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   												
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>												
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">COMMESSA</td> <td style="width: 10%;">LOTTO</td> <td style="width: 15%;">CODIFICA</td> <td style="width: 15%;">DOCUMENTO</td> <td style="width: 10%;">REV.</td> <td style="width: 10%;">FOGLIO</td> </tr> <tr> <td>IF28</td> <td>01</td> <td>E ZZ CL</td> <td>VI0403 001</td> <td>B</td> <td>177 di 354</td> </tr> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF28	01	E ZZ CL	VI0403 001	B	177 di 354
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO							
IF28	01	E ZZ CL	VI0403 001	B	177 di 354							

11	1.2689E-03	4.4457E-03	3.0160E-05	-4.0740E-07	1.2133E-06	-2.5969E-04
12	1.0034E-04	4.4457E-03	3.1993E-05	-4.0740E-07	1.2133E-06	-2.5969E-04
13	2.4321E-03	4.4439E-03	2.8327E-05	-4.0740E-07	1.2133E-06	-2.5969E-04
14	1.2635E-03	4.4439E-03	3.0160E-05	-4.0740E-07	1.2133E-06	-2.5969E-04
15	9.4876E-05	4.4439E-03	3.1993E-05	-4.0740E-07	1.2133E-06	-2.5969E-04

MINIMUM	9.4876E-05	4.4439E-03	2.8327E-05	-4.0740E-07	1.2133E-06	-2.5969E-04
Pile N.	15	13	1	1	1	1
MAXIMUM	2.4539E-03	4.4512E-03	3.1993E-05	-4.0740E-07	1.2133E-06	-2.5969E-04
Pile N.	1	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

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
1	3946.2	969.06	6.5444	-0.1358	-19.410	2769.8
2	2242.8	771.87	5.6367	-0.1358	-17.880	2334.7
3	205.66	777.14	6.0738	-0.1358	-19.317	2343.9
4	3940.5	930.16	6.2903	-0.1358	-18.865	2686.4
5	2233.4	704.46	5.1599	-0.1358	-16.769	2178.3
6	196.04	705.86	5.5357	-0.1358	-18.064	2178.8
7	3934.8	929.82	6.2912	-0.1358	-18.867	2685.1
8	2223.9	703.34	5.1546	-0.1358	-16.756	2175.2
9	186.42	704.74	5.5300	-0.1358	-18.050	2175.7
10	3929.0	929.47	6.2921	-0.1358	-18.869	2683.9
11	2214.4	703.96	5.1615	-0.1358	-16.773	2176.2
12	176.80	705.36	5.5374	-0.1358	-18.068	2176.7
13	3923.3	967.63	6.5479	-0.1358	-19.417	2764.6
14	2204.9	770.76	5.6401	-0.1358	-17.887	2330.3
15	167.18	776.02	6.0774	-0.1358	-19.325	2339.5

MINIMUM	167.18	703.34	5.1546	-0.1358	-19.417	2175.2
Pile N.	15	8	8	1	13	8
MAXIMUM	3946.2	969.06	6.5479	-0.1358	-16.756	2769.8
Pile N.	1	1	13	1	8	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	2.4539E-03	4.4512E-03	2.8327E-05	-4.0740E-07	1.2133E-06	-2.5969E-04
2	1.2853E-03	4.4512E-03	3.0160E-05	-4.0740E-07	1.2133E-06	-2.5969E-04
3	1.1672E-04	4.4512E-03	3.1993E-05	-4.0740E-07	1.2133E-06	-2.5969E-04
4	2.4485E-03	4.4494E-03	2.8327E-05	-4.0740E-07	1.2133E-06	-2.5969E-04
5	1.2799E-03	4.4494E-03	3.0160E-05	-4.0740E-07	1.2133E-06	-2.5969E-04
6	1.1126E-04	4.4494E-03	3.1993E-05	-4.0740E-07	1.2133E-06	-2.5969E-04
7	2.4430E-03	4.4475E-03	2.8327E-05	-4.0740E-07	1.2133E-06	-2.5969E-04
8	1.2744E-03	4.4475E-03	3.0160E-05	-4.0740E-07	1.2133E-06	-2.5969E-04
9	1.0580E-04	4.4475E-03	3.1993E-05	-4.0740E-07	1.2133E-06	-2.5969E-04
10	2.4375E-03	4.4457E-03	2.8327E-05	-4.0740E-07	1.2133E-06	-2.5969E-04
11	1.2689E-03	4.4457E-03	3.0160E-05	-4.0740E-07	1.2133E-06	-2.5969E-04
12	1.0034E-04	4.4457E-03	3.1993E-05	-4.0740E-07	1.2133E-06	-2.5969E-04
13	2.4321E-03	4.4439E-03	2.8327E-05	-4.0740E-07	1.2133E-06	-2.5969E-04
14	1.2635E-03	4.4439E-03	3.0160E-05	-4.0740E-07	1.2133E-06	-2.5969E-04
15	9.4876E-05	4.4439E-03	3.1993E-05	-4.0740E-07	1.2133E-06	-2.5969E-04

MINIMUM	9.4876E-05	4.4439E-03	2.8327E-05	-4.0740E-07	1.2133E-06	-2.5969E-04
Pile N.	15	13	1	1	1	1
MAXIMUM	2.4539E-03	4.4512E-03	3.1993E-05	-4.0740E-07	1.2133E-06	-2.5969E-04
Pile N.	1	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	3946.2	969.06	6.5444	-0.1358	-19.410	2769.8
2	2242.8	771.87	5.6367	-0.1358	-17.880	2334.7
3	205.66	777.14	6.0738	-0.1358	-19.317	2343.9
4	3940.5	930.16	6.2903	-0.1358	-18.865	2686.4
5	2233.4	704.46	5.1599	-0.1358	-16.769	2178.3
6	196.04	705.86	5.5357	-0.1358	-18.064	2178.8
7	3934.8	929.82	6.2912	-0.1358	-18.867	2685.1
8	2223.9	703.34	5.1546	-0.1358	-16.756	2175.2
9	186.42	704.74	5.5300	-0.1358	-18.050	2175.7
10	3929.0	929.47	6.2921	-0.1358	-18.869	2683.9
11	2214.4	703.96	5.1615	-0.1358	-16.773	2176.2
12	176.80	705.36	5.5374	-0.1358	-18.068	2176.7
13	3923.3	967.63	6.5479	-0.1358	-19.417	2764.6
14	2204.9	770.76	5.6401	-0.1358	-17.887	2330.3
15	167.18	776.02	6.0774	-0.1358	-19.325	2339.5

MINIMUM	167.18	703.34	5.1546	-0.1358	-19.417	2175.2
Pile N.	15	8	8	1	13	8
MAXIMUM	3946.2	969.06	6.5479	-0.1358	-16.756	2769.8
Pile N.	1	1	13	1	8	1

<b>APPALTATORE:</b> Consorzio  Soci  	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria  Mandanti  	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	

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

1	1.0593E+04
2	8315.7
3	7190.8
4	1.0338E+04
5	7838.1
6	6686.8
7	1.0331E+04
8	7823.5
9	6672.1
10	1.0324E+04
11	7821.1
12	6669.6
13	1.0564E+04
14	8280.8
15	7155.5

MINIMUM	6669.6
Pile N.	12
MAXIMUM	1.0593E+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.
	y-Dir	z-Dir	y-Dir	y-Dir	z-Dir	y-Dir	z-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	-6.8627E-05	-4.4748E-07	-2769.8	-19.410	-368.93	-2.4122	-104.72	-0.6848	2233.1	7.8279E+06	7.8279E+06
x(M)	9.9000	10.080	0.0000	0.0000	8.4600	8.4600	10.080	10.260	18.000	0.0000	0.0000
2	-7.0251E-05	-4.8998E-07	-2334.7	-17.880	-283.96	-1.9864	-71.225	-0.5003	1269.2	7.8279E+06	7.8279E+06
x(M)	10.800	10.800	0.0000	0.0000	9.0000	9.1800	11.160	11.160	18.000	0.0000	0.0000
3	-7.0017E-05	-5.2015E-07	-2343.9	-19.317	-285.54	-2.1262	-71.771	-0.5371	116.38	7.8279E+06	7.8279E+06
x(M)	10.800	10.800	0.0000	0.0000	9.0000	9.1800	10.980	11.160	18.000	0.0000	0.0000
4	-6.8842E-05	-4.4805E-07	-2686.4	-18.865	-351.23	-2.2970	-97.307	-0.6365	2229.9	7.8279E+06	7.8279E+06
x(M)	10.080	10.080	0.0000	0.0000	8.4600	8.6400	10.260	10.440	18.000	0.0000	0.0000
5	-7.1302E-05	-4.9777E-07	-2178.3	-16.769	-255.33	-1.7862	-61.668	-0.4336	1263.8	7.8279E+06	7.8279E+06
x(M)	11.160	11.160	0.0000	0.0000	9.3600	9.3600	11.520	11.520	18.000	0.0000	0.0000
6	-7.1123E-05	-5.2861E-07	-2178.8	-18.064	-255.08	-1.9002	-61.633	-0.4617	110.94	7.8279E+06	7.8279E+06
x(M)	11.160	11.160	0.0000	0.0000	9.3600	9.3600	11.520	11.520	18.000	0.0000	0.0000
7	-6.8811E-05	-4.4806E-07	-2685.1	-18.867	-351.13	-2.2973	-97.285	-0.6367	2226.6	7.8279E+06	7.8279E+06
x(M)	10.080	10.080	0.0000	0.0000	8.4600	8.6400	10.260	10.440	18.000	0.0000	0.0000
8	-7.1294E-05	-4.9788E-07	-2175.2	-16.756	-254.90	-1.7838	-61.535	-0.4328	1258.5	7.8279E+06	7.8279E+06
x(M)	11.160	11.160	0.0000	0.0000	9.3600	9.3600	11.520	11.520	18.000	0.0000	0.0000
9	-7.1115E-05	-5.2873E-07	-2175.7	-18.050	-254.64	-1.8977	-61.500	-0.4609	105.49	7.8279E+06	7.8279E+06
x(M)	11.160	11.160	0.0000	0.0000	9.3600	9.3600	11.520	11.520	18.000	0.0000	0.0000
10	-6.8780E-05	-4.4806E-07	-2683.9	-18.869	-351.03	-2.2975	-97.264	-0.6368	2223.4	7.8279E+06	7.8279E+06
x(M)	10.080	10.080	0.0000	0.0000	8.4600	8.6400	10.260	10.440	18.000	0.0000	0.0000
11	-7.1236E-05	-4.9776E-07	-2176.2	-16.773	-255.18	-1.7868	-61.637	-0.4338	1253.1	7.8279E+06	7.8279E+06
x(M)	11.160	11.160	0.0000	0.0000	9.3600	9.3600	11.520	11.520	18.000	0.0000	0.0000
12	-7.1056E-05	-5.2861E-07	-2176.7	-18.068	-254.92	-1.9008	-61.603	-0.4620	100.05	7.8279E+06	7.8279E+06
x(M)	11.160	11.160	0.0000	0.0000	9.3600	9.3600	11.520	11.520	18.000	0.0000	0.0000
13	-6.8508E-05	-4.4744E-07	-2764.6	-19.417	-368.43	-2.4134	-104.62	-0.6854	2220.1	7.8279E+06	7.8279E+06
x(M)	9.9000	10.080	0.0000	0.0000	8.4600	8.4600	10.080	10.260	18.000	0.0000	0.0000
14	-7.0124E-05	-4.8999E-07	-2330.3	-17.887	-283.65	-1.9875	-71.154	-0.5007	1247.7	7.8279E+06	7.8279E+06
x(M)	10.800	10.800	0.0000	0.0000	9.0000	9.1800	11.160	11.160	18.000	0.0000	0.0000
15	-6.9891E-05	-5.2019E-07	-2339.5	-19.325	-285.23	-2.1275	-71.708	-0.5376	94.605	7.8279E+06	7.8279E+06
x(M)	10.800	10.800	0.0000	0.0000	9.0000	9.1800	10.980	11.160	18.000	0.0000	0.0000
Min.	-7.1302E-05	-5.2873E-07	-2769.8	-19.417	-368.93	-2.4134	-104.72	-0.6854	94.605	7.8279E+06	7.8279E+06
Pile N.	5	9	1	13	1	13	1	13	15	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	y-Dir	y-Dir	z-Dir	y-Dir	z-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	4.4512E-03	2.8327E-05	1327.8	8.5969	969.19	6.5452	418.12	2.7632	1.0593E+04	7.8279E+06	7.8279E+06
x(M)	0.0000	0.0000	5.9400	6.1200	0.0000	0.0000	4.1400	4.1400	0.0000	0.0000	0.0000
2	4.4512E-03	3.0160E-05	1117.7	7.7184	771.93	5.6372	295.36	2.0942	8315.7	7.8279E+06	7.8279E+06
x(M)	0.0000	0.0000	6.4800	6.4800	0.0000	0.0000	4.1400	4.1400	0.0000	0.0000	0.0000
3	4.4512E-03	3.1993E-05	1121.5	8.2369	777.14	6.0739	297.83	2.2525	7190.8	7.8279E+06	7.8279E+06
x(M)	0.0000	0.0000	6.4800	6.4800	0.0000	0.0000	4.1400	4.1400	0.0000	0.0000	0.0000
4	4.4494E-03	2.8327E-05	1288.1	8.3362	930.28	6.2912	392.80	2.5977	1.0338E+04	7.8279E+06	7.8279E+06
x(M)	0.0000	0.0000	6.1200	6.1200	0.0000	0.0000	4.1400	4.1400	0.0000	0.0000	0.0000
5	4.4494E-03	3.0160E-05	1043.3	7.2073	704.52	5.1604	257.35	1.8266	7838.1	7.8279E+06	7.8279E+06
x(M)	0.0000	0.0000	6.6600	6.8400	0.0000	0.0000	4.1400	4.1400	0.0000	0.0000	0.0000
6	4.4494E-03	3.1993E-05	1043.0	7.6648	705.87	5.5358	257.57	1.9504	6686.8	7.8279E+06	7.8279E+06
x(M)	0.0000	0.0000	6.6600	6.8400	0.0000	0.0000	4.1400	4.1400	0.0000	0.0000	0.0000
7	4.4475E-03	2.8327E-05	1287.7	8.3370	929.94	6.2921	392.69	2.5982	1.0331E+04	7.8279E+06	7.8279E+06
x(M)	0.0000	0.0000	6.1200	6.1200	0.0000	0.0000	4.1400	4.1400	0.0000	0.0000	0.0000
8	4.4475E-03	3.0160E-05	1042.0	7.2017	703.40	5.1550	256.80	1.8236	7823.5	7.8279E+06	7.8279E+06
x(M)	0.0000	0.0000	6.6600	6.8400	0.0000	0.0000	4.1400	4.1400	0.0000	0.0000	0.0000
9	4.4475E-03	3.1993E-05	1041.7	7.6588	704.75	5.5300	257.02	1.9472	6672.1	7.8279E+06	7.8279E+06
x(M)	0.0000	0.0000	6.6600	6.8400	0.0000	0.0000	4.1400	4.1400	0.0000	0.0000	0.0000
10	4.4457E-03	2.8327E-05	1287.3	8.3378	929.60	6.2929	392.59	2.5987	1.0324E+04	7.8279E+06	7.8279E+06

<b>APPALTATORE:</b> Consorzio <b>Soci</b> 	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>				
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b> 					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>					
<b>COMMESSA</b> <b>IF28</b>	<b>LOTTO</b> <b>01</b>	<b>CODIFICA</b> <b>E ZZ CL</b>	<b>DOCUMENTO</b> <b>VI0403 001</b>	<b>REV.</b> <b>B</b>	<b>FOGLIO</b> <b>179 di 354</b>

x(M)	0.0000	0.0000	6.1200	6.1200	0.0000	0.0000	4.1400	4.1400	0.0000	0.0000	0.0000
11	4.4457E-03	3.0160E-05	1042.6	7.2087	704.01	5.1620	257.21	1.8274	7821.1	7.8279E+06	7.8279E+06
x(M)	0.0000	0.0000	6.6600	6.8400	0.0000	0.0000	4.1400	4.1400	0.0000	0.0000	0.0000
12	4.4457E-03	3.1993E-05	1042.3	7.6664	705.36	5.5375	257.43	1.9512	6669.6	7.8279E+06	7.8279E+06
x(M)	0.0000	0.0000	6.6600	6.8400	0.0000	0.0000	4.1400	4.1400	0.0000	0.0000	0.0000
13	4.4439E-03	2.8327E-05	1326.1	8.6002	967.75	6.5487	417.66	2.7653	1.0564E+04	7.8279E+06	7.8279E+06
x(M)	0.0000	0.0000	5.9400	6.1200	0.0000	0.0000	4.1400	4.1400	0.0000	0.0000	0.0000
14	4.4439E-03	3.0160E-05	1116.2	7.7216	770.82	5.6406	295.03	2.0958	8280.8	7.8279E+06	7.8279E+06
x(M)	0.0000	0.0000	6.4800	6.4800	0.0000	0.0000	4.1400	4.1400	0.0000	0.0000	0.0000
15	4.4439E-03	3.1993E-05	1120.0	8.2403	776.02	6.0775	297.50	2.2543	7155.5	7.8279E+06	7.8279E+06
x(M)	0.0000	0.0000	6.4800	6.4800	0.0000	0.0000	4.1400	4.1400	0.0000	0.0000	0.0000
Max.	4.4512E-03	3.1993E-05	1327.8	8.6002	969.19	6.5487	418.12	2.7653	1.0593E+04	7.8279E+06	7.8279E+06
Pile N.	1	3	1	13	1	13	1	13	1	1	1

LOAD CASE : 22  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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

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

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
27688.8	-23711.8	87.4731
MOMENT X, KN-M	MOMENT Y, KN-M	MOMENT Z, KN-M
-10.4995	840.585	66338.4

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
1.22958E-03	-0.0113105	3.98812E-05
ANGLE ROT. X,RAD	ANGLE ROT. Y,RAD	ANGLE ROT. Z,RAD
2.21943E-07	1.28263E-06	4.87115E-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	-9.5090E-04	-0.011312	4.0880E-05	2.2194E-07	1.2826E-06	4.8711E-04
2	1.2411E-03	-0.011312	3.9881E-05	2.2194E-07	1.2826E-06	4.8711E-04
3	3.4331E-03	-0.011312	3.8882E-05	2.2194E-07	1.2826E-06	4.8711E-04
4	-9.5667E-04	-0.011312	4.0880E-05	2.2194E-07	1.2826E-06	4.8711E-04
5	1.2354E-03	-0.011312	3.9881E-05	2.2194E-07	1.2826E-06	4.8711E-04
6	3.4274E-03	-0.011312	3.8882E-05	2.2194E-07	1.2826E-06	4.8711E-04
7	-9.6244E-04	-0.011310	4.0880E-05	2.2194E-07	1.2826E-06	4.8711E-04
8	1.2296E-03	-0.011310	3.9881E-05	2.2194E-07	1.2826E-06	4.8711E-04
9	3.4216E-03	-0.011310	3.8882E-05	2.2194E-07	1.2826E-06	4.8711E-04
10	-9.6821E-04	-0.011310	4.0880E-05	2.2194E-07	1.2826E-06	4.8711E-04
11	1.2238E-03	-0.011310	3.9881E-05	2.2194E-07	1.2826E-06	4.8711E-04
12	3.4158E-03	-0.011310	3.8882E-05	2.2194E-07	1.2826E-06	4.8711E-04
13	-9.7398E-04	-0.011309	4.0880E-05	2.2194E-07	1.2826E-06	4.8711E-04
14	1.2180E-03	-0.011309	3.9881E-05	2.2194E-07	1.2826E-06	4.8711E-04
15	3.4100E-03	-0.011309	3.8882E-05	2.2194E-07	1.2826E-06	4.8711E-04

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>				
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>					
<b>COMMESSA</b> <b>IF28</b>	<b>LOTTO</b> <b>01</b>	<b>CODIFICA</b> <b>E ZZ CL</b>	<b>DOCUMENTO</b> <b>VI0403 001</b>	<b>REV.</b> <b>B</b>	<b>FOGLIO</b> <b>180 di 354</b>

MINIMUM -9.7398E-04 -0.011312 3.8882E-05 2.2194E-07 1.2826E-06 4.8711E-04  
Pile N. 13 1 3 1 1 1  
MAXIMUM 3.4331E-03 -0.011309 4.0880E-05 2.2194E-07 1.2826E-06 4.8711E-04  
Pile N. 3 13 1 1 1 1

\* PILE TOP REACTIONS \*

PILE GROUP FOR. X, KN FOR. Y, KN FOR. Z, KN MOM X, KN- M MOM Y, KN- M MOM Z, KN- M

1	-1552.5	-1529.4	5.8185	0.073973	-20.593	-5247.3
2	2166.1	-1516.5	5.6110	0.073973	-19.907	-5227.0
3	4975.2	-1907.6	6.8335	0.073973	-22.754	-6201.5
4	-1561.9	-1388.9	5.2941	0.073973	-19.231	-4883.9
5	2156.0	-1383.8	5.1286	0.073973	-18.653	-4883.0
6	4969.1	-1830.7	6.5623	0.073973	-22.103	-6017.1
7	-1571.3	-1387.2	5.2879	0.073973	-19.215	-4879.0
8	2146.0	-1382.1	5.1226	0.073973	-18.637	-4878.1
9	4963.0	-1830.5	6.5626	0.073973	-22.104	-6016.6
10	-1580.7	-1388.8	5.2945	0.073973	-19.232	-4883.0
11	2136.0	-1383.7	5.1290	0.073973	-18.653	-4882.1
12	4957.0	-1830.4	6.5628	0.073973	-22.104	-6016.0
13	-1590.1	-1529.0	5.8194	0.073973	-20.595	-5245.3
14	2125.9	-1516.1	5.6119	0.073973	-19.909	-5225.1
15	4950.9	-1907.1	6.8344	0.073973	-22.756	-6199.2

MINIMUM -1590.1 -1907.6 5.1226 0.073973 -22.756 -6201.5  
Pile N. 13 3 8 1 15 3  
MAXIMUM 4975.2 -1382.1 6.8344 0.073973 -18.637 -4878.1  
Pile N. 3 8 15 1 8 8

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

PILE GROUP DISP. x, M DISP. y, M DISP. z, M ROT. x, RAD ROT. y, RAD ROT. z, RAD

1	-9.5090E-04	-0.011312	4.0880E-05	2.2194E-07	1.2826E-06	4.8711E-04
2	1.2411E-03	-0.011312	3.9881E-05	2.2194E-07	1.2826E-06	4.8711E-04
3	3.4331E-03	-0.011312	3.8882E-05	2.2194E-07	1.2826E-06	4.8711E-04
4	-9.5667E-04	-0.011312	4.0880E-05	2.2194E-07	1.2826E-06	4.8711E-04
5	1.2354E-03	-0.011312	3.9881E-05	2.2194E-07	1.2826E-06	4.8711E-04
6	3.4274E-03	-0.011312	3.8882E-05	2.2194E-07	1.2826E-06	4.8711E-04
7	-9.6244E-04	-0.011310	4.0880E-05	2.2194E-07	1.2826E-06	4.8711E-04
8	1.2296E-03	-0.011310	3.9881E-05	2.2194E-07	1.2826E-06	4.8711E-04
9	3.4216E-03	-0.011310	3.8882E-05	2.2194E-07	1.2826E-06	4.8711E-04
10	-9.6821E-04	-0.011310	4.0880E-05	2.2194E-07	1.2826E-06	4.8711E-04
11	1.2238E-03	-0.011310	3.9881E-05	2.2194E-07	1.2826E-06	4.8711E-04
12	3.4158E-03	-0.011310	3.8882E-05	2.2194E-07	1.2826E-06	4.8711E-04
13	-9.7398E-04	-0.011309	4.0880E-05	2.2194E-07	1.2826E-06	4.8711E-04
14	1.2180E-03	-0.011309	3.9881E-05	2.2194E-07	1.2826E-06	4.8711E-04
15	3.4100E-03	-0.011309	3.8882E-05	2.2194E-07	1.2826E-06	4.8711E-04

MINIMUM -9.7398E-04 -0.011312 3.8882E-05 2.2194E-07 1.2826E-06 4.8711E-04  
Pile N. 13 1 3 1 1 1  
MAXIMUM 3.4331E-03 -0.011309 4.0880E-05 2.2194E-07 1.2826E-06 4.8711E-04  
Pile N. 3 13 1 1 1 1

\* PILE TOP REACTIONS \*

PILE GROUP AXIAL, KN LAT. y, KN LAT. z, KN MOM x, KN- M MOM y, KN- M MOM z, KN- M







1	-1552.5	-1529.4	5.8185	0.073973	-20.593	-5247.3
2	2166.1	-1516.5	5.6110	0.073973	-19.907	-5227.0
3	4975.2	-1907.6	6.8335	0.073973	-22.754	-6201.5
4	-1561.9	-1388.9	5.2941	0.073973	-19.231	-4883.9
5	2156.0	-1383.8	5.1286	0.073973	-18.653	-4883.0
6	4969.1	-1830.7	6.5623	0.073973	-22.103	-6017.1
7	-1571.3	-1387.2	5.2879	0.073973	-19.215	-4879.0
8	2146.0	-1382.1	5.1226	0.073973	-18.637	-4878.1
9	4963.0	-1830.5	6.5626	0.073973	-22.104	-6016.6
10	-1580.7	-1388.8	5.2945	0.073973	-19.232	-4883.0
11	2136.0	-1383.7	5.1290	0.073973	-18.653	-4882.1
12	4957.0	-1830.4	6.5628	0.073973	-22.104	-6016.0
13	-1590.1	-1529.0	5.8194	0.073973	-20.595	-5245.3
14	2125.9	-1516.1	5.6119	0.073973	-19.909	-5225.1
15	4950.9	-1907.1	6.8344	0.073973	-22.756	-6199.2

MINIMUM -1590.1 -1907.6 5.1226 0.073973 -22.756 -6201.5  
Pile N. 13 3 8 1 15 3  
MAXIMUM 4975.2 -1382.1 6.8344 0.073973 -18.637 -4878.1  
Pile N. 3 8 15 1 8 8

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

1	1.6715E+04
2	1.7001E+04
3	2.1532E+04
4	1.5624E+04



<b>APPALTATORE:</b> Consorzio  Soci  	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>											
<b>PROGETTAZIONE:</b> Mandataria  Mandanti  												
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>												
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">COMMESSA</td> <td style="width: 10%;">LOTTO</td> <td style="width: 15%;">CODIFICA</td> <td style="width: 15%;">DOCUMENTO</td> <td style="width: 10%;">REV.</td> <td style="width: 10%;">FOGLIO</td> </tr> <tr> <td>IF28</td> <td>01</td> <td>E ZZ CL</td> <td>VI0403 001</td> <td>B</td> <td>182 di 354</td> </tr> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF28	01	E ZZ CL	VI0403 001	B	182 di 354
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO							
IF28	01	E ZZ CL	VI0403 001	B	182 di 354							

x( M)	12.060	0.0000	0.0000	7.2000	10.260	0.0000	14.040	4.1400	0.0000	0.0000	0.0000
14	1.7686E-04	3.9881E-05	5225.1	8.1294	519.79	5.6124	118.67	1.7894	1.6973E+04	7.8279E+06	7.8279E+06
x( M)	12.060	0.0000	0.0000	7.2000	10.260	0.0000	14.040	4.1400	0.0000	0.0000	0.0000
15	1.6777E-04	3.8882E-05	6199.2	9.4916	674.80	6.8357	165.84	2.5171	2.1511E+04	7.8279E+06	7.8279E+06
x( M)	11.160	0.0000	0.0000	6.6600	9.3600	0.0000	11.340	4.1400	0.0000	0.0000	0.0000
Max.	1.8217E-04	4.0880E-05	6201.5	9.4916	674.97	6.8357	165.88	2.5171	2.1532E+04	7.8279E+06	7.8279E+06
Pile N.	8	1	3	15	3	15	3	1	1		

LOAD CASE : 23  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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	0.5012	1.0000
3	0.6023	1.0000
4	0.5420	1.0000
5	0.4643	1.0000
6	0.5609	1.0000
7	0.5420	1.0000
8	0.4642	1.0000
9	0.5609	1.0000
10	0.5751	1.0000
11	0.4961	1.0000
12	0.5929	1.0000
13	0.8538	1.0000
14	0.7952	1.0000
15	0.8661	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN HOR. LOAD Y, KN HOR. LOAD Z, KN  
27688.8 -3499.85 -15401.8

MOMENT X, KN- M MOMENT Y, KN- M MOMENT Z, KN- M  
-5909.51 -53198.5 777.010

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL, M HORIZONTAL Y, M HORIZONTAL Z, M  
1.06166E-03 -1.30069E-03 -5.56964E-03

ANGLE ROT. X,RAD ANGLE ROT. Y,RAD ANGLE ROT. Z,RAD  
-3.01267E-05 -1.01061E-04 3.66931E-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	-1.3005E-05	-1.0295E-03	-5.7052E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
2	1.5211E-04	-1.0295E-03	-5.5696E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
3	3.1723E-04	-1.0295E-03	-5.4341E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
4	4.4177E-04	-1.1651E-03	-5.7052E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
5	6.0689E-04	-1.1651E-03	-5.5696E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
6	7.7201E-04	-1.1651E-03	-5.4341E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
7	8.9654E-04	-1.3007E-03	-5.7052E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
8	1.0617E-03	-1.3007E-03	-5.5696E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
9	1.2268E-03	-1.3007E-03	-5.4341E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
10	1.3513E-03	-1.4363E-03	-5.7052E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
11	1.5164E-03	-1.4363E-03	-5.5696E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
12	1.6815E-03	-1.4363E-03	-5.4341E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
13	1.8061E-03	-1.5718E-03	-5.7052E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
14	1.9712E-03	-1.5718E-03	-5.5696E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
15	2.1363E-03	-1.5718E-03	-5.4341E-03	-3.0127E-05	-1.0106E-04	3.6693E-05

MINIMUM -1.3005E-05 -1.5718E-03 -5.7052E-03 -3.0127E-05 -1.0106E-04 3.6693E-05  
Pile N. 1 13 1 1 1 1  
MAXIMUM 2.1363E-03 -1.0295E-03 -5.4341E-03 -3.0127E-05 -1.0106E-04 3.6693E-05  
Pile N. 15 1 3 1 1 1

\* PILE TOP REACTIONS \*

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	COMMESSA <b>IF28</b> LOTTO <b>01</b> CODIFICA <b>E ZZ CL</b> DOCUMENTO <b>VI0403 001</b> REV. <b>B</b> FOGLIO <b>183 di 354</b>

PILE GROUP FOR. X, KN FOR. Y, KN FOR. Z, KN MOM X, KN- M MOM Y, KN- M MOM Z, KN- M

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
1	-21.327	-176.02	-1046.4	-10.041	3592.6	-581.13
2	268.04	-160.66	-932.72	-10.041	3278.4	-542.57
3	558.99	-181.79	-1025.1	-10.041	3480.4	-594.83
4	777.31	-191.61	-990.78	-10.041	3451.2	-647.57
5	1064.2	-176.67	-891.65	-10.041	3177.7	-610.81
6	1351.0	-200.49	-983.41	-10.041	3381.4	-670.52
7	1567.4	-216.29	-988.68	-10.041	3447.4	-737.32
8	1854.3	-199.48	-889.65	-10.041	3174.0	-695.87
9	2141.1	-226.26	-981.26	-10.041	3377.6	-763.14
10	2357.5	-249.03	-1019.7	-10.041	3524.2	-846.69
11	2644.4	-230.71	-921.39	-10.041	3254.4	-801.93
12	2931.2	-259.81	-1009.5	-10.041	3447.0	-874.52
13	3147.6	-344.71	-1276.7	-10.041	4132.9	-1104.1
14	3434.5	-333.91	-1205.7	-10.041	3937.7	-1079.8
15	3612.5	-352.40	-1239.1	-10.041	3977.2	-1121.1
MINIMUM	-21.327	-352.40	-1276.7	-10.041	3174.0	-1121.1
Pile N.	1	15	13	1	8	15
MAXIMUM	3612.5	-160.66	-889.65	-10.041	4132.9	-542.57
Pile N.	15	2	8	1	13	2

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

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x, RAD	ROT. y, RAD	ROT. z, RAD
1	-1.3005E-05	-1.0295E-03	-5.7052E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
2	1.5211E-04	-1.0295E-03	-5.5696E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
3	3.1723E-04	-1.0295E-03	-5.4341E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
4	4.4177E-04	-1.1651E-03	-5.7052E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
5	6.0689E-04	-1.1651E-03	-5.5696E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
6	7.7201E-04	-1.1651E-03	-5.4341E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
7	8.9654E-04	-1.3007E-03	-5.7052E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
8	1.0617E-03	-1.3007E-03	-5.5696E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
9	1.2268E-03	-1.3007E-03	-5.4341E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
10	1.3513E-03	-1.4363E-03	-5.7052E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
11	1.5164E-03	-1.4363E-03	-5.5696E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
12	1.6815E-03	-1.4363E-03	-5.4341E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
13	1.8061E-03	-1.5718E-03	-5.7052E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
14	1.9712E-03	-1.5718E-03	-5.5696E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
15	2.1363E-03	-1.5718E-03	-5.4341E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
MINIMUM	-1.3005E-05	-1.5718E-03	-5.7052E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
Pile N.	1	13	1	1	1	1
MAXIMUM	2.1363E-03	-1.0295E-03	-5.4341E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
Pile N.	15	1	3	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP AXIAL, KN LAT. y, KN LAT. z, KN MOM x, KN- M MOM y, KN- M MOM z, KN- M







PILE GROUP	AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
1	-21.327	-176.02	-1046.4	-10.041	3592.6	-581.13
2	268.04	-160.66	-932.72	-10.041	3278.4	-542.57
3	558.99	-181.79	-1025.1	-10.041	3480.4	-594.83
4	777.31	-191.61	-990.78	-10.041	3451.2	-647.57
5	1064.2	-176.67	-891.65	-10.041	3177.7	-610.81
6	1351.0	-200.49	-983.41	-10.041	3381.4	-670.52
7	1567.4	-216.29	-988.68	-10.041	3447.4	-737.32
8	1854.3	-199.48	-889.65	-10.041	3174.0	-695.87
9	2141.1	-226.26	-981.26	-10.041	3377.6	-763.14
10	2357.5	-249.03	-1019.7	-10.041	3524.2	-846.69
11	2644.4	-230.71	-921.39	-10.041	3254.4	-801.93
12	2931.2	-259.81	-1009.5	-10.041	3447.0	-874.52
13	3147.6	-344.71	-1276.7	-10.041	4132.9	-1104.1
14	3434.5	-333.91	-1205.7	-10.041	3937.7	-1079.8
15	3612.5	-352.40	-1239.1	-10.041	3977.2	-1121.1
MINIMUM	-21.327	-352.40	-1276.7	-10.041	3174.0	-1121.1
Pile N.	1	15	13	1	8	15
MAXIMUM	3612.5	-160.66	-889.65	-10.041	4132.9	-542.57
Pile N.	15	2	8	1	13	2

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

1	1.0996E+04
2	1.0181E+04
3	1.0973E+04
4	1.1037E+04
5	1.0368E+04
6	1.1169E+04
7	1.1527E+04
8	1.0856E+04
9	1.1662E+04
10	1.2273E+04





<b>APPALTATORE:</b> Consorzio  Soci  	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>												
<b>PROGETTAZIONE:</b> Mandataria  Mandanti  													
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	<table border="1"> <tr> <td>COMMESSA</td> <td>LOTTO</td> <td>CODIFICA</td> <td>DOCUMENTO</td> <td>REV.</td> <td>FOGLIO</td> </tr> <tr> <td>IF28</td> <td>01</td> <td>E ZZ CL</td> <td>VI0403 001</td> <td>B</td> <td>185 di 354</td> </tr> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF28	01	E ZZ CL	VI0403 001	B	185 di 354
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO								
IF28	01	E ZZ CL	VI0403 001	B	185 di 354								

Max. 2.4915E-05 9.2360E-05 1121.1 4132.9 123.26 439.15 33.085 116.85 1.4692E+04 7.8279E+06 7.8279E+06  
Pile N. 14 1 15 13 15 13 15 13 13 1 1

LOAD CASE : 24  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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	0.8543	1.0000
2	0.7956	1.0000
3	0.8661	1.0000
4	0.5752	1.0000
5	0.4961	1.0000
6	0.5923	1.0000
7	0.5421	1.0000
8	0.4641	1.0000
9	0.5602	1.0000
10	0.5421	1.0000
11	0.4642	1.0000
12	0.5602	1.0000
13	0.5845	1.0000
14	0.5010	1.0000
15	0.6016	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
31672.5	-3499.85	15576.7
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
5867.83	54882.8	-889.190

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
1.22604E-03	-1.29666E-03	5.68020E-03
ANGLE ROT. X,RAD	ANGLE ROT. Y,RAD	ANGLE ROT. Z,RAD
3.01870E-05	1.05948E-04	3.34473E-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	2.0291E-03	-1.5684E-03	5.8160E-03	3.0187E-05	1.0595E-04	3.3447E-05
2	2.1796E-03	-1.5684E-03	5.6802E-03	3.0187E-05	1.0595E-04	3.3447E-05
3	2.3301E-03	-1.5684E-03	5.5444E-03	3.0187E-05	1.0595E-04	3.3447E-05
4	1.5523E-03	-1.4325E-03	5.8160E-03	3.0187E-05	1.0595E-04	3.3447E-05
5	1.7028E-03	-1.4325E-03	5.6802E-03	3.0187E-05	1.0595E-04	3.3447E-05
6	1.8533E-03	-1.4325E-03	5.5444E-03	3.0187E-05	1.0595E-04	3.3447E-05
7	1.0755E-03	-1.2967E-03	5.8160E-03	3.0187E-05	1.0595E-04	3.3447E-05
8	1.2260E-03	-1.2967E-03	5.6802E-03	3.0187E-05	1.0595E-04	3.3447E-05
9	1.3766E-03	-1.2967E-03	5.5444E-03	3.0187E-05	1.0595E-04	3.3447E-05
10	5.9876E-04	-1.1608E-03	5.8160E-03	3.0187E-05	1.0595E-04	3.3447E-05
11	7.4927E-04	-1.1608E-03	5.6802E-03	3.0187E-05	1.0595E-04	3.3447E-05
12	8.9979E-04	-1.1608E-03	5.5444E-03	3.0187E-05	1.0595E-04	3.3447E-05
13	1.2200E-04	-1.0250E-03	5.8160E-03	3.0187E-05	1.0595E-04	3.3447E-05
14	2.7251E-04	-1.0250E-03	5.6802E-03	3.0187E-05	1.0595E-04	3.3447E-05
15	4.2302E-04	-1.0250E-03	5.5444E-03	3.0187E-05	1.0595E-04	3.3447E-05
MINIMUM	1.2200E-04	-1.5684E-03	5.5444E-03	3.0187E-05	1.0595E-04	3.3447E-05
Pile N.	13	1	3	1	1	1
MAXIMUM	2.3301E-03	-1.0250E-03	5.8160E-03	3.0187E-05	1.0595E-04	3.3447E-05
Pile N.	3	13	1	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP	FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
1	3499.8	-344.70	1292.6	10.061	-4188.3	-1110.4
2	3658.0	-333.90	1221.1	10.061	-3991.5	-1085.9
3	3816.1	-352.21	1255.0	10.061	-4032.3	-1127.0

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	COMMESSA <b>IF28</b> LOTTO <b>01</b> CODIFICA <b>E ZZ CL</b> DOCUMENTO <b>VI0403 001</b> REV. <b>B</b> FOGLIO <b>186 di 354</b>

4	2706.7	-249.17	1031.9	10.061	-3569.7	-852.82
5	2968.2	-230.83	932.53	10.061	-3296.8	-807.88
6	3229.7	-259.71	1021.6	10.061	-3492.2	-880.11
7	1878.4	-216.51	1000.4	10.061	-3491.6	-743.51
8	2139.9	-199.67	900.27	10.061	-3214.9	-701.86
9	2401.4	-226.25	992.86	10.061	-3421.5	-768.85
10	1050.1	-191.91	1002.5	10.061	-3495.3	-653.86
11	1311.6	-176.95	902.28	10.061	-3218.5	-616.92
12	1573.0	-200.59	995.02	10.061	-3425.3	-676.39
13	214.97	-174.50	1047.6	10.061	-3603.3	-581.65
14	480.18	-160.98	943.72	10.061	-3320.3	-548.77
15	744.74	-181.97	1037.2	10.061	-3525.5	-600.86

MINIMUM	214.97	-352.21	900.27	10.061	-4188.3	-1127.0
Pile N.	13	3	8	1	1	3
MAXIMUM	3816.1	-160.98	1292.6	10.061	-3214.9	-548.77
Pile N.	3	14	1	1	8	14

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	2.0291E-03	-1.5684E-03	5.8160E-03	3.0187E-05	1.0595E-04	3.3447E-05
2	2.1796E-03	-1.5684E-03	5.6802E-03	3.0187E-05	1.0595E-04	3.3447E-05
3	2.3301E-03	-1.5684E-03	5.5444E-03	3.0187E-05	1.0595E-04	3.3447E-05
4	1.5523E-03	-1.4325E-03	5.8160E-03	3.0187E-05	1.0595E-04	3.3447E-05
5	1.7028E-03	-1.4325E-03	5.6802E-03	3.0187E-05	1.0595E-04	3.3447E-05
6	1.8533E-03	-1.4325E-03	5.5444E-03	3.0187E-05	1.0595E-04	3.3447E-05
7	1.0755E-03	-1.2967E-03	5.8160E-03	3.0187E-05	1.0595E-04	3.3447E-05
8	1.2260E-03	-1.2967E-03	5.6802E-03	3.0187E-05	1.0595E-04	3.3447E-05
9	1.3766E-03	-1.2967E-03	5.5444E-03	3.0187E-05	1.0595E-04	3.3447E-05
10	5.9876E-04	-1.1608E-03	5.8160E-03	3.0187E-05	1.0595E-04	3.3447E-05
11	7.4927E-04	-1.1608E-03	5.6802E-03	3.0187E-05	1.0595E-04	3.3447E-05
12	8.9979E-04	-1.1608E-03	5.5444E-03	3.0187E-05	1.0595E-04	3.3447E-05
13	1.2200E-04	-1.0250E-03	5.8160E-03	3.0187E-05	1.0595E-04	3.3447E-05
14	2.7251E-04	-1.0250E-03	5.6802E-03	3.0187E-05	1.0595E-04	3.3447E-05
15	4.2302E-04	-1.0250E-03	5.5444E-03	3.0187E-05	1.0595E-04	3.3447E-05

MINIMUM	1.2200E-04	-1.5684E-03	5.5444E-03	3.0187E-05	1.0595E-04	3.3447E-05
Pile N.	13	1	3	1	1	1
MAXIMUM	2.3301E-03	-1.0250E-03	5.8160E-03	3.0187E-05	1.0595E-04	3.3447E-05
Pile N.	3	13	1	1	1	1

\* PILE TOP REACTIONS \*

PILE GROUP AXIAL, KN LAT. y, KN LAT. z, KN MOM x, KN- M MOM y, KN- M MOM z, KN- M

1	3499.8	-344.70	1292.6	10.061	-4188.3	-1110.4
2	3658.0	-333.90	1221.1	10.061	-3991.5	-1085.9
3	3816.1	-352.21	1255.0	10.061	-4032.3	-1127.0
4	2706.7	-249.17	1031.9	10.061	-3569.7	-852.82
5	2968.2	-230.83	932.53	10.061	-3296.8	-807.88
6	3229.7	-259.71	1021.6	10.061	-3492.2	-880.11
7	1878.4	-216.51	1000.4	10.061	-3491.6	-743.51
8	2139.9	-199.67	900.27	10.061	-3214.9	-701.86
9	2401.4	-226.25	992.86	10.061	-3421.5	-768.85
10	1050.1	-191.91	1002.5	10.061	-3495.3	-653.86
11	1311.6	-176.95	902.28	10.061	-3218.5	-616.92
12	1573.0	-200.59	995.02	10.061	-3425.3	-676.39
13	214.97	-174.50	1047.6	10.061	-3603.3	-581.65
14	480.18	-160.98	943.72	10.061	-3320.3	-548.77
15	744.74	-181.97	1037.2	10.061	-3525.5	-600.86

MINIMUM	214.97	-352.21	900.27	10.061	-4188.3	-1127.0
Pile N.	13	3	8	1	1	3
MAXIMUM	3816.1	-160.98	1292.6	10.061	-3214.9	-548.77
Pile N.	3	14	1	1	8	14

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

1	1.5058E+04
2	1.4554E+04
3	1.4796E+04
4	1.2609E+04
5	1.1924E+04
6	1.2697E+04
7	1.1837E+04
8	1.1142E+04
9	1.1943E+04
10	1.1326E+04
11	1.0633E+04
12	1.1428E+04
13	1.1137E+04
14	1.0428E+04
15	1.1215E+04

APPALTATORE:

Consorzio

Soci



ITINERARIO NAPOLI – BARI

PROGETTAZIONE:

Mandatara

Mandanti



RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

PROGETTO ESECUTIVO

RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO
IF28	01	E ZZ CL	VI0403 001	B	187 di 354

MINIMUM 1.0428E+04  
Pile N. 14  
MAXIMUM 1.5058E+04  
Pile N. 1







\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL.		MOMENT		SHEAR		SOIL REACT		TOTAL	FLEX.	RIG.	FLEX.	RIG.
	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/M	KN/M	KN-M**2	KN-M**2				
x(M) 1	-1.5683E-03	-9.2384E-05	-442.23	-4188.3	-344.75	-445.44	-134.71	-118.17	1980.5	7.8279E+06	7.8279E+06	0.0000	0.0000
x(M) 2	-1.5683E-03	-9.0753E-05	-430.90	-3991.5	-333.94	-419.58	-127.92	-109.38	2070.0	7.8279E+06	7.8279E+06	0.0000	0.0000
x(M) 3	-1.5683E-03	-8.8245E-05	-449.35	-4032.3	-352.26	-435.60	-139.01	-116.61	2159.5	7.8279E+06	7.8279E+06	0.0000	0.0000
x(M) 4	-1.4325E-03	-8.8667E-05	-332.30	-3569.7	-249.20	-329.20	-86.522	-79.107	1531.7	7.8279E+06	7.8279E+06	0.0000	0.0000
x(M) 5	-1.4325E-03	-8.8608E-05	-312.56	-3296.8	-230.86	-294.37	-76.662	-68.159	1679.6	7.8279E+06	7.8279E+06	0.0000	0.0000
x(M) 6	-1.4325E-03	-9.0067E-05	-347.13	-3492.2	-259.74	-336.45	-91.122	-81.907	1827.6	7.8279E+06	7.8279E+06	0.0000	0.0000
x(M) 7	-1.2967E-03	-8.9452E-05	-292.46	-3491.6	-216.53	-317.47	-74.049	-75.052	1062.9	7.8279E+06	7.8279E+06	0.0000	0.0000
x(M) 8	-1.2967E-03	-8.9637E-05	-274.22	-3214.9	-199.69	-282.10	-65.168	-64.533	1210.9	7.8279E+06	7.8279E+06	0.0000	0.0000
x(M) 9	-1.2967E-03	-9.0147E-05	-305.85	-3421.5	-226.27	-323.75	-78.287	-77.840	1358.9	7.8279E+06	7.8279E+06	0.0000	0.0000
x(M) 10	-1.1608E-03	-8.9328E-05	-261.13	-3495.3	-191.92	-317.74	-65.954	-75.179	594.21	7.8279E+06	7.8279E+06	0.0000	0.0000
x(M) 11	-1.1608E-03	-8.9502E-05	-244.86	-3218.5	-176.96	-282.43	-58.047	-64.559	742.19	7.8279E+06	7.8279E+06	0.0000	0.0000
x(M) 12	-1.1608E-03	-9.0026E-05	-273.14	-3425.3	-200.60	-324.03	-69.741	-77.980	890.16	7.8279E+06	7.8279E+06	0.0000	0.0000
x(M) 13	-1.0250E-03	-8.8204E-05	-237.78	-3603.3	-174.50	-333.86	-61.792	-80.690	121.65	7.8279E+06	7.8279E+06	0.0000	0.0000
x(M) 14	-1.0250E-03	-8.8101E-05	-223.00	-3320.3	-160.98	-296.85	-54.456	-69.119	271.73	7.8279E+06	7.8279E+06	0.0000	0.0000
x(M) 15	-1.0250E-03	-8.9915E-05	-248.07	-3525.5	-181.97	-341.82	-65.088	-83.727	421.44	7.8279E+06	7.8279E+06	0.0000	0.0000
Min.	-1.5683E-03	-9.2384E-05	-449.35	-4188.3	-352.26	-445.44	-139.01	-118.17	121.65	7.8279E+06	7.8279E+06		
Pile N.	1	1	3	1	3	1	3	1	13	1	1		

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL.		MOMENT		SHEAR		SOIL REACT		TOTAL	FLEX.	RIG.	FLEX.	RIG.
	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/M	KN/M	KN-M**2	KN-M**2				
x(M) 1	2.4782E-05	5.8160E-03	1110.4	1646.0	119.43	1292.8	31.684	503.14	1.5058E+04	7.8279E+06	7.8279E+06	0.0000	0.0000
x(M) 2	2.4950E-05	5.6802E-03	1085.9	1565.4	115.31	1221.2	30.045	466.18	1.4554E+04	7.8279E+06	7.8279E+06	0.0000	0.0000
x(M) 3	2.4874E-05	5.5444E-03	1127.0	1592.9	122.75	1255.2	32.847	493.93	1.4796E+04	7.8279E+06	7.8279E+06	0.0000	0.0000
x(M) 4	2.1646E-05	5.8160E-03	852.82	1357.5	80.396	1032.0	19.293	355.62	1.2609E+04	7.8279E+06	7.8279E+06	0.0000	0.0000
x(M) 5	2.2156E-05	5.6802E-03	807.88	1246.5	73.581	932.64	17.028	307.45	1.1924E+04	7.8279E+06	7.8279E+06	0.0000	0.0000
x(M) 6	2.3103E-05	5.5444E-03	880.11	1350.2	86.265	1021.8	20.981	356.25	1.2697E+04	7.8279E+06	7.8279E+06	0.0000	0.0000
x(M) 7	1.9672E-05	5.8160E-03	743.51	1323.2	69.812	1000.5	16.482	338.26	1.1837E+04	7.8279E+06	7.8279E+06	0.0000	0.0000
x(M) 8	2.0188E-05	5.6802E-03	701.86	1211.1	63.613	900.35	14.462	290.49	1.1142E+04	7.8279E+06	7.8279E+06	0.0000	0.0000
x(M) 9	2.0852E-05	5.5444E-03	768.85	1318.3	74.767	992.96	17.963	340.14	1.1943E+04	7.8279E+06	7.8279E+06	0.0000	0.0000
x(M) 10	1.7490E-05	5.8160E-03	653.86	1324.4	62.205	1002.6	14.690	339.02	1.1326E+04	7.8279E+06	7.8279E+06	0.0000	0.0000
x(M) 11	1.7941E-05	5.6802E-03	616.92	1212.2	56.715	902.32	12.888	291.18	1.0633E+04	7.8279E+06	7.8279E+06	0.0000	0.0000
x(M) 12	1.8558E-05	5.5444E-03	676.39	1319.5	66.670	995.08	16.017	340.94	1.1428E+04	7.8279E+06	7.8279E+06	0.0000	0.0000
x(M) 13	1.5149E-05	5.8160E-03	581.65	1370.3	57.388	1047.6	13.830	363.03	1.1137E+04	7.8279E+06	7.8279E+06	0.0000	0.0000
x(M) 14	1.5487E-05	5.6802E-03	548.77	1255.0	52.242	943.74	12.132	312.26	1.0428E+04	7.8279E+06	7.8279E+06	0.0000	0.0000
x(M) 15	1.6260E-05	5.5444E-03	600.86	1363.8	61.599	1037.3	15.075	363.66	1.1215E+04	7.8279E+06	7.8279E+06	0.0000	0.0000
Max.	2.4950E-05	5.8160E-03	1127.0	1646.0	122.75	1292.8	32.847	503.14	1.5058E+04	7.8279E+06	7.8279E+06		
Pile N.	2	1	3	1	3	1	3	1	1	1	1		

<b>APPALTATORE:</b> Consorzio  Soci  	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>												
<b>PROGETTAZIONE:</b> Mandataria  Mandanti  													
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	<table border="1"> <tr> <td>COMMESSA</td> <td>LOTTO</td> <td>CODIFICA</td> <td>DOCUMENTO</td> <td>REV.</td> <td>FOGLIO</td> </tr> <tr> <td>IF28</td> <td>01</td> <td>E ZZ CL</td> <td>VI0403 001</td> <td>B</td> <td>188 di 354</td> </tr> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF28	01	E ZZ CL	VI0403 001	B	188 di 354
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO								
IF28	01	E ZZ CL	VI0403 001	B	188 di 354								

\*\*\*\*\* 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
45027.5	-1690.85	730.964	-228.282	6103.67	-7838.94

\* 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
1.72219E-03	-3.06540E-04	1.65579E-04	-7.31390E-07	7.75649E-06	-7.15321E-06

\* PILE TOP DISPLACEMENTS, GLOBAL \*

DISP. X, M DISP. Y, M DISP. Z, M ROT. X,RAD ROT. Y,RAD ROT. Z,RAD

MINIMUM	1.6202E-03	-3.1312E-04	1.6229E-04	-7.3139E-07	7.7565E-06	-7.1532E-06
Pile N.	15	13	1	1	1	1
MAXIMUM	1.8242E-03	-2.9996E-04	1.6887E-04	-7.3139E-07	7.7565E-06	-7.1532E-06
Pile N.	1	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	2824.6	-126.28	44.069	-0.2438	-155.66	-384.18
Pile N.	15	15	10	1	3	15
MAXIMUM	3179.0	-103.38	56.700	-0.2438	-128.38	-334.82
Pile N.	1	5	3	1	10	5

\* PILE TOP DISPLACEMENTS, LOCAL \*

DISP. x, M DISP. y, M DISP. z, M ROT. x,RAD ROT. y,RAD ROT. z,RAD

MINIMUM	1.6202E-03	-3.1312E-04	1.6229E-04	-7.3139E-07	7.7565E-06	-7.1532E-06
Pile N.	15	13	1	1	1	1
MAXIMUM	1.8242E-03	-2.9996E-04	1.6887E-04	-7.3139E-07	7.7565E-06	-7.1532E-06
Pile N.	1	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	2824.6	-126.28	44.069	-0.2438	-155.66	-384.18
Pile N.	15	15	10	1	3	15
MAXIMUM	3179.0	-103.38	56.700	-0.2438	-128.38	-334.82
Pile N.	1	5	3	1	10	5

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR z-DIR	SHEAR y-DIR	SOIL REACT z-DIR	SOIL REACT y-DIR	TOTAL
	M	M	KN- M	KN- M	KN	KN/ M	KN/ M	KN/ M**2	
Min.	-3.1368E-04	-4.0096E-06	-157.48	-155.66	-126.30	-26.960	-95.348	-10.135	1598.4
Pile N.	14	8	15	3	15	3	3	3	15
Max.	8.2123E-06	1.6887E-04	384.18	80.213	52.543	56.705	19.863	46.514	2963.4
Pile N.	11	3	15	3	15	3	3	3	

LOAD CASE : 2

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
44623.0	-6178.97	730.964	-267.113	6103.67	12857.7

\* 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
1.73136E-03	-1.84654E-03	2.10733E-04	-2.69935E-07	9.05506E-06	9.64260E-05

\* PILE TOP DISPLACEMENTS, GLOBAL \*

DISP. X, M DISP. Y, M DISP. Z, M ROT. X,RAD ROT. Y,RAD ROT. Z,RAD

MINIMUM	1.2159E-03	-1.8490E-03	2.0952E-04	-2.6994E-07	9.0551E-06	9.6426E-05
Pile N.	13	13	1	1	1	1
MAXIMUM	2.2468E-03	-1.8441E-03	2.1195E-04	-2.6994E-07	9.0551E-06	9.6426E-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	2122.3	-486.01	43.232	-0.089969	-165.69	-1367.7
Pile N.	13	15	7	1	3	15
MAXIMUM	3728.6	-366.78	57.759	-0.089969	-134.14	-1115.1
Pile N.	3	8	3	1	7	8

\* PILE TOP DISPLACEMENTS, LOCAL \*

DISP. x, M DISP. y, M DISP. z, M ROT. x,RAD ROT. y,RAD ROT. z,RAD

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>											
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   												
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>												
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COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO							
IF28	01	E Z CL	VI0403 001	B	189 di 354							

\*\*\*\*\*  
 MINIMUM 1.2159E-03 -1.8490E-03 2.0952E-04 -2.6994E-07 9.0551E-06 9.6426E-05  
 Pile N. 13 13 1 1 1 1  
 MAXIMUM 2.2468E-03 -1.8441E-03 2.1195E-04 -2.6994E-07 9.0551E-06 9.6426E-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 2122.3 -486.01 43.232 -0.089969 -165.69 -1367.7  
 Pile N. 13 15 7 1 3 15  
 MAXIMUM 3728.6 -366.78 57.759 -0.089969 -134.14 -1115.1  
 Pile N. 3 8 3 1 7 8

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	MOMENT x-DIR	SHEAR z-DIR	SHEAR y-DIR	SOIL REACT z-DIR	SOIL REACT y-DIR	TOTAL
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2	
Min.	-1.8490E-03	-3.8429E-06	-667.56	-165.69	-486.07	-23.787	-257.99	-8.1343	1201.0	
Pile N.	13	8	15	3	15	3	3	13		
Max.	3.3222E-05	2.1195E-04	1367.7	77.529	203.94	57.766	69.742	30.318	6260.3	
Pile N.	11	3	15	3	3	3	3	3		

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  
 41839.6 -5525.43 603.246 -119.238 3555.75 4935.44

\* 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  
 1.59986E-03 -1.51490E-03 1.60536E-04 4.29709E-07 5.11248E-06 6.11315E-05

\* PILE TOP DISPLACEMENTS, GLOBAL \*  
 DISP. X, M DISP. Y, M DISP. Z, M ROT. X,RAD ROT. Y,RAD ROT. Z,RAD

\*\*\*\*\*  
 MINIMUM 1.2787E-03 -1.5188E-03 1.5860E-04 4.2971E-07 5.1125E-06 6.1132E-05  
 Pile N. 13 1 3 1 1 1  
 MAXIMUM 1.9210E-03 -1.5110E-03 1.6247E-04 4.2971E-07 5.1125E-06 6.1132E-05  
 Pile N. 3 13 1 1 1 1

\* PILE TOP REACTIONS, GLOBAL \*  
 FOR. X, KN FOR. Y, KN FOR. Z, KN MOM X, KN- M MOM Y, KN- M MOM Z, KN- M

\*\*\*\*\*  
 MINIMUM 2231.4 -442.97 35.490 0.1432 -138.00 -1267.2  
 Pile N. 13 3 8 1 3 3  
 MAXIMUM 3347.2 -324.19 47.547 0.1432 -112.31 -1007.6  
 Pile N. 3 11 3 1 8 11

\* PILE TOP DISPLACEMENTS, LOCAL \*  
 DISP. x, M DISP. y, M DISP. z, M ROT. x,RAD ROT. y,RAD ROT. z,RAD

\*\*\*\*\*  
 MINIMUM 1.2787E-03 -1.5188E-03 1.5860E-04 4.2971E-07 5.1125E-06 6.1132E-05  
 Pile N. 13 1 3 1 1 1  
 MAXIMUM 1.9210E-03 -1.5110E-03 1.6247E-04 4.2971E-07 5.1125E-06 6.1132E-05  
 Pile N. 3 13 1 1 1 1

\* PILE TOP REACTIONS, LOCAL \*  
 AXIAL, KN LAT. y, KN LAT. z, KN MOM x, KN- M MOM y, KN- M MOM z, KN- M

\*\*\*\*\*  
 MINIMUM 2231.4 -442.97 35.490 0.1432 -138.00 -1267.2  
 Pile N. 13 3 8 1 3 3  
 MAXIMUM 3347.2 -324.19 47.547 0.1432 -112.31 -1007.6  
 Pile N. 3 11 3 1 8 11

\* EFFECTS FOR LATERALLY LOADED PILE \*







PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	MOMENT x-DIR	SHEAR z-DIR	SHEAR y-DIR	SOIL REACT z-DIR	SOIL REACT y-DIR	TOTAL
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2	
Min.	-1.5188E-03	-3.3343E-06	-606.85	-138.00	-443.01	-20.437	-246.28	-6.9425	1262.7	
Pile N.	1	12	3	3	3	3	3	13		
Max.	3.1543E-05	1.6247E-04	1267.2	63.996	193.45	47.552	65.659	26.182	5741.2	
Pile N.	6	1	3	3	3	3	3	3		

LOAD CASE : 4

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*  
 LOAD X, KN LOAD Y, KN LOAD Z, KN MOM X, KN- M MOM Y, KN- M MOM Z, KN- M  
 45447.6 -5912.75 1025.26 -182.035 9631.34 5770.67

\* 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

<b>APPALTATORE:</b> Consorzio  Soci  	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>												
<b>PROGETTAZIONE:</b> Mandataria  Mandanti  													
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">COMMESSA</td> <td style="width: 10%;">LOTTO</td> <td style="width: 15%;">CODIFICA</td> <td style="width: 15%;">DOCUMENTO</td> <td style="width: 10%;">REV.</td> <td style="width: 10%;">FOGLIO</td> </tr> <tr> <td>IF28</td> <td>01</td> <td>E ZZ CL</td> <td>VI0403 001</td> <td>B</td> <td>190 di 354</td> </tr> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF28	01	E ZZ CL	VI0403 001	B	190 di 354
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO								
IF28	01	E ZZ CL	VI0403 001	B	190 di 354								

1.75144E-03 -1.67580E-03 2.94966E-04 5.26233E-07 1.36430E-05 7.11715E-05

**\* PILE TOP DISPLACEMENTS, GLOBAL \***

DISP. X, M DISP. Y, M DISP. Z, M ROT. X,RAD ROT. Y,RAD ROT. Z,RAD

MINIMUM	1.3084E-03	-1.6805E-03	2.9260E-04	5.2623E-07	1.3643E-05	7.1171E-05
Pile N.	13	1	3	1	1	1
MAXIMUM	2.1945E-03	-1.6711E-03	2.9733E-04	5.2623E-07	1.3643E-05	7.1171E-05
Pile N.	3	13	1	1	1	1

**\* PILE TOP REACTIONS, GLOBAL \***

FOR. X, KN FOR. Y, KN FOR. Z, KN MOM X, KN- M MOM Y, KN- M MOM Z, KN- M

MINIMUM	2282.9	-480.68	60.589	0.1754	-233.50	-1373.0
Pile N.	13	3	8	1	3	3
MAXIMUM	3673.6	-349.30	82.434	0.1754	-186.55	-1084.2
Pile N.	3	11	3	1	8	11

**\* PILE TOP DISPLACEMENTS, LOCAL \***

DISP. x, M DISP. y, M DISP. z, M ROT. x,RAD ROT. y,RAD ROT. z,RAD

MINIMUM	1.3084E-03	-1.6805E-03	2.9260E-04	5.2623E-07	1.3643E-05	7.1171E-05
Pile N.	13	1	3	1	1	1
MAXIMUM	2.1945E-03	-1.6711E-03	2.9733E-04	5.2623E-07	1.3643E-05	7.1171E-05
Pile N.	3	13	1	1	1	1

**\* PILE TOP REACTIONS, LOCAL \***

AXIAL, KN LAT. y, KN LAT. z, KN MOM x, KN- M MOM y, KN- M MOM z, KN- M

MINIMUM	2282.9	-480.68	60.589	0.1754	-233.50	-1373.0
Pile N.	13	3	8	1	3	3
MAXIMUM	3673.6	-349.30	82.434	0.1754	-186.55	-1084.2
Pile N.	3	11	3	1	8	11

**\* EFFECTS FOR LATERALLY LOADED PILE \***

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT KN-M	MOMENT y-DIR	MOMENT z-DIR	SHEAR KN	SHEAR y-DIR	SOIL REACT KN/M	SOIL REACT z-DIR	STRESS KN/M**2	TOTAL
Min.	-1.6805E-03	-5.9361E-06	-661.31	-233.50	-480.74	-36.272	-259.93	-12.550	1291.9		
Pile N.	1	15	3	3	3	3	3	13			
Max.	3.4232E-05	2.9733E-04	1373.0	114.49	209.62	82.444	72.555	44.818	6282.1		
Pile N.	3	1	3	3	3	3	3	3			

LOAD CASE : 5

**\* TABLE L \* COMPUTATION ON PILE CAP**

**\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \***

LOAD X, KN LOAD Y, KN LOAD Z, KN MOM X, KN- M MOM Y, KN- M MOM Z, KN- M

28827.0 -3052.82 747.880 -74.4689 6801.50 -378.093

**\* 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

1.10053E-03 -7.16612E-04 1.83299E-04 2.09621E-07 8.49736E-06 2.46296E-05

**\* PILE TOP DISPLACEMENTS, GLOBAL \***

DISP. X, M DISP. Y, M DISP. Z, M ROT. X,RAD ROT. Y,RAD ROT. Z,RAD

MINIMUM	9.1322E-04	-7.1850E-04	1.8236E-04	2.0962E-07	8.4974E-06	2.4630E-05
Pile N.	13	1	3	1	1	1
MAXIMUM	1.2878E-03	-7.1473E-04	1.8424E-04	2.0962E-07	8.4974E-06	2.4630E-05
Pile N.	3	13	1	1	1	1

**\* PILE TOP REACTIONS, GLOBAL \***

FOR. X, KN FOR. Y, KN FOR. Z, KN MOM X, KN- M MOM Y, KN- M MOM Z, KN- M

MINIMUM	1596.4	-232.37	45.537	0.069866	-157.31	-660.56
Pile N.	13	3	8	1	3	3
MAXIMUM	2247.2	-186.02	56.557	0.069866	-135.80	-567.36
Pile N.	3	11	3	1	8	11

**\* PILE TOP DISPLACEMENTS, LOCAL \***

DISP. x, M DISP. y, M DISP. z, M ROT. x,RAD ROT. y,RAD ROT. z,RAD







MINIMUM	9.1322E-04	-7.1850E-04	1.8236E-04	2.0962E-07	8.4974E-06	2.4630E-05
Pile N.	13	1	3	1	1	1
MAXIMUM	1.2878E-03	-7.1473E-04	1.8424E-04	2.0962E-07	8.4974E-06	2.4630E-05
Pile N.	3	13	1	1	1	1

**\* PILE TOP REACTIONS, LOCAL \***

AXIAL, KN LAT. y, KN LAT. z, KN MOM x, KN- M MOM y, KN- M MOM z, KN- M

MINIMUM	1596.4	-232.37	45.537	0.069866	-157.31	-660.56
Pile N.	13	3	8	1	3	3
MAXIMUM	2247.2	-186.02	56.557	0.069866	-135.80	-567.36
Pile N.	3	11	3	1	8	11

**\* EFFECTS FOR LATERALLY LOADED PILE \***

<b>APPALTATORE:</b> Consorzio  Soci  	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria  Mandanti  	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	
COMMESSA <b>IF28</b> LOTTO <b>01</b> CODIFICA <b>E Z CL</b> DOCUMENTO <b>VI0403 001</b> REV. <b>B</b> FOGLIO <b>191 di 354</b>	

PILE	DISPL.	DISPL.	MOMENT	MOMENT	SHEAR	SHEAR	SOIL REACT	SOIL REACT	TOTAL
	y-DIR	z-DIR	z-DIR	y-DIR	y-DIR	z-DIR	y-DIR	z-DIR	STRESS
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2
Min.	-7.1850E-04	-4.2760E-06	-317.11	-157.31	-232.39	-26.210	-156.34	-9.1467	903.37
Pile N.	1	7	3	3	3	3	3	13	
Max.	1.6953E-05	1.8424E-04	660.56	79.316	105.04	56.561	36.780	38.615	3321.0
Pile N.	8	1	3	3	3	3	3	3	

LOAD CASE : 6

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
45447.6	-5912.75	1025.26	-182.035	9631.34	5770.31

\* 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
1.75144E-03	-1.67580E-03	2.94966E-04	5.26233E-07	1.36430E-05	7.11704E-05

\* PILE TOP DISPLACEMENTS, GLOBAL \*

DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.3084E-03	-1.6805E-03	2.9260E-04	5.2623E-07	1.3643E-05
Pile N.	13	1	3	1	1
MAXIMUM	2.1945E-03	-1.6711E-03	2.9733E-04	5.2623E-07	1.3643E-05
Pile N.	3	13	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	2282.9	-480.68	60.589	0.1754	-233.50
Pile N.	13	3	8	1	3
MAXIMUM	3673.6	-349.30	82.434	0.1754	-186.55
Pile N.	3	11	3	1	8

\* PILE TOP DISPLACEMENTS, LOCAL \*

DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	1.3084E-03	-1.6805E-03	2.9260E-04	5.2623E-07	1.3643E-05
Pile N.	13	1	3	1	1
MAXIMUM	2.1945E-03	-1.6711E-03	2.9733E-04	5.2623E-07	1.3643E-05
Pile N.	3	13	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	2282.9	-480.68	60.589	0.1754	-233.50
Pile N.	13	3	8	1	3
MAXIMUM	3673.6	-349.30	82.434	0.1754	-186.55
Pile N.	3	11	3	1	8

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL.	DISPL.	MOMENT	MOMENT	SHEAR	SHEAR	SOIL REACT	SOIL REACT	TOTAL
	y-DIR	z-DIR	z-DIR	y-DIR	y-DIR	z-DIR	y-DIR	z-DIR	STRESS
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2
Min.	-1.6805E-03	-5.9361E-06	-661.31	-233.50	-480.74	-36.272	-259.93	-12.550	1291.9
Pile N.	1	15	3	3	3	3	3	13	
Max.	3.4232E-05	2.9733E-04	1373.0	114.49	209.61	82.444	72.555	44.818	6282.1
Pile N.	3	1	3	3	3	3	3	3	

LOAD CASE : 7

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
35398.3	-1957.07	1025.26	-162.620	9631.34	-7161.46

\* 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
1.35269E-03	-3.80966E-04	2.41027E-04	-5.31086E-07	1.18954E-05	-3.03132E-06

\* PILE TOP DISPLACEMENTS, GLOBAL \*

DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.2320E-03	-3.8575E-04	2.3864E-04	-5.3109E-07	1.1895E-05
Pile N.	15	13	1	1	1
MAXIMUM	1.4734E-03	-3.7619E-04	2.4342E-04	-5.3109E-07	1.1895E-05
Pile N.	1	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	2150.2	-145.79	62.240	-0.1770	-216.31
Pile N.	15	3	8	1	3

<b>APPALTATORE:</b> Consorzio  Soci  	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>												
<b>PROGETTAZIONE:</b> Mandataria  Mandanti  													
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">COMMESSA</td> <td style="width: 10%;">LOTTO</td> <td style="width: 15%;">CODIFICA</td> <td style="width: 15%;">DOCUMENTO</td> <td style="width: 10%;">REV.</td> <td style="width: 10%;">FOGLIO</td> </tr> <tr> <td>IF28</td> <td>01</td> <td>E Z CL</td> <td>VI0403 001</td> <td>B</td> <td>192 di 354</td> </tr> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF28	01	E Z CL	VI0403 001	B	192 di 354
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO								
IF28	01	E Z CL	VI0403 001	B	192 di 354								

MAXIMUM 2569.6 -119.64 78.841 -0.1770 -182.66 -384.09  
Pile N. 1 8 3 1 11 5

\* PILE TOP DISPLACEMENTS, LOCAL \*  
DISP. x, M DISP. y, M DISP. z, M ROT. x, RAD ROT. y, RAD ROT. z, RAD

MINIMUM 1.2320E-03 -3.8575E-04 2.3864E-04 -5.3109E-07 1.1895E-05 -3.0313E-06  
Pile N. 15 13 1 1 1 1  
MAXIMUM 1.4734E-03 -3.7619E-04 2.4342E-04 -5.3109E-07 1.1895E-05 -3.0313E-06  
Pile N. 1 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 2150.2 -145.79 62.240 -0.1770 -216.31 -436.30  
Pile N. 15 3 8 1 3 15  
MAXIMUM 2569.6 -119.64 78.841 -0.1770 -182.66 -384.09  
Pile N. 1 8 3 1 11 5

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL.	DISPL.	MOMENT	MOMENT	SHEAR	SHEAR	SOIL REACT	SOIL REACT	TOTAL
y-Dir	z-Dir	z-Dir	y-Dir	y-Dir	z-Dir	y-Dir	z-Dir	z-Dir	STRESS
M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M	KN/ M**2
Min.	-3.8575E-04	-5.6893E-06	-184.92	-216.31	-145.80	-37.499	-106.21	-14.222	1216.8
Pile N.	13	8	3	3	3	3	15		
Max.	9.7434E-06	2.4342E-04	436.30	111.84	62.357	78.848	23.843	60.975	2893.2
Pile N.	11	3	15	3	3	3	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  
42484.7 -5912.75 641.876 -137.878 3424.46 6472.16

\* 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  
1.62470E-03 -1.66565E-03 1.73346E-04 3.06627E-07 5.13340E-06 6.89090E-05

\* PILE TOP DISPLACEMENTS, GLOBAL \*  
DISP. X, M DISP. Y, M DISP. Z, M ROT. X, RAD ROT. Y, RAD ROT. Z, RAD

MINIMUM 1.2684E-03 -1.6684E-03 1.7197E-04 3.0663E-07 5.1334E-06 6.8909E-05  
Pile N. 13 1 3 1 1 1  
MAXIMUM 1.9810E-03 -1.6629E-03 1.7473E-04 3.0663E-07 5.1334E-06 6.8909E-05  
Pile N. 3 13 1 1 1 1

\* PILE TOP REACTIONS, GLOBAL \*  
FOR. X, KN FOR. Y, KN FOR. Z, KN MOM X, KN- M MOM Y, KN- M MOM Z, KN- M

MINIMUM 2213.5 -479.76 38.064 0.1022 -150.20 -1372.5  
Pile N. 13 3 8 1 3 3  
MAXIMUM 3449.3 -349.74 51.430 0.1022 -121.35 -1087.9  
Pile N. 3 8 3 1 8 11

\* PILE TOP DISPLACEMENTS, LOCAL \*  
DISP. x, M DISP. y, M DISP. z, M ROT. x, RAD ROT. y, RAD ROT. z, RAD

MINIMUM 1.2684E-03 -1.6684E-03 1.7197E-04 3.0663E-07 5.1334E-06 6.8909E-05  
Pile N. 13 1 3 1 1 1  
MAXIMUM 1.9810E-03 -1.6629E-03 1.7473E-04 3.0663E-07 5.1334E-06 6.8909E-05  
Pile N. 3 13 1 1 1 1

\* PILE TOP REACTIONS, LOCAL \*  
AXIAL, KN LAT. y, KN LAT. z, KN MOM x, KN- M MOM y, KN- M MOM z, KN- M

MINIMUM 2213.5 -479.76 38.064 0.1022 -150.20 -1372.5  
Pile N. 13 3 8 1 3 3  
MAXIMUM 3449.3 -349.74 51.430 0.1022 -121.35 -1087.9  
Pile N. 3 8 3 1 8 11

\* EFFECTS FOR LATERALLY LOADED PILE \*







PILE	DISPL.	DISPL.	MOMENT	MOMENT	SHEAR	SHEAR	SOIL REACT	SOIL REACT	TOTAL
y-Dir	z-Dir	z-Dir	y-Dir	y-Dir	z-Dir	y-Dir	z-Dir	z-Dir	STRESS
M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M	KN/ M**2
Min.	-1.6684E-03	-3.5652E-06	-658.36	-150.20	-479.81	-21.883	-260.15	-7.5622	1252.6
Pile N.	1	15	3	3	3	3	13		
Max.	3.4029E-05	1.7473E-04	1372.5	68.895	208.87	51.436	72.108	27.507	6119.0
Pile N.	3	1	3	3	3	3	3		

LOAD CASE : 9

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*



<b>APPALTATORE:</b> Consorzio  Soci  	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>												
<b>PROGETTAZIONE:</b> Mandataria  Mandanti  													
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">COMMESSA</td> <td style="width: 10%;">LOTTO</td> <td style="width: 15%;">CODIFICA</td> <td style="width: 15%;">DOCUMENTO</td> <td style="width: 10%;">REV.</td> <td style="width: 10%;">FOGLIO</td> </tr> <tr> <td>IF28</td> <td>01</td> <td>E ZZ CL</td> <td>VI0403 001</td> <td>B</td> <td>193 di 354</td> </tr> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF28	01	E ZZ CL	VI0403 001	B	193 di 354
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO								
IF28	01	E ZZ CL	VI0403 001	B	193 di 354								

LOAD X, KN    LOAD Y, KN    LOAD Z, KN    MOM X, KN- M    MOM Y, KN- M    MOM Z, KN- M  
 45335.9    -1957.07    1025.26    -162.620    9631.34    -11819.2

\* 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  
 1.73402E-03    -3.41732E-04    2.40676E-04    -6.49751E-07    1.18948E-05    -1.55643E-05

\* PILE TOP DISPLACEMENTS, GLOBAL \*  
 DISP. X, M    DISP. Y, M    DISP. Z, M    ROT. X,RAD    ROT. Y,RAD    ROT. Z,RAD  
 \*\*\*\*\*  
 MINIMUM    1.5569E-03    -3.4758E-04    2.3775E-04    -6.4975E-07    1.1895E-05    -1.5564E-05  
 Pile N.    15    13    1    1    1    1  
 MAXIMUM    1.9111E-03    -3.3589E-04    2.4360E-04    -6.4975E-07    1.1895E-05    -1.5564E-05  
 Pile N.    1    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    2714.7    -144.87    62.188    -0.2166    -216.96    -451.91  
 Pile N.    15    3    11    1    3    15  
 MAXIMUM    3330.1    -119.96    79.097    -0.2166    -182.48    -400.85  
 Pile N.    1    8    3    1    10    5

\* PILE TOP DISPLACEMENTS, LOCAL \*  
 DISP. x, M    DISP. y, M    DISP. z, M    ROT. x,RAD    ROT. y,RAD    ROT. z,RAD  
 \*\*\*\*\*  
 MINIMUM    1.5569E-03    -3.4758E-04    2.3775E-04    -6.4975E-07    1.1895E-05    -1.5564E-05  
 Pile N.    15    13    1    1    1    1  
 MAXIMUM    1.9111E-03    -3.3589E-04    2.4360E-04    -6.4975E-07    1.1895E-05    -1.5564E-05  
 Pile N.    1    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    2714.7    -144.87    62.188    -0.2166    -216.96    -451.91  
 Pile N.    15    3    11    1    3    15  
 MAXIMUM    3330.1    -119.96    79.097    -0.2166    -182.48    -400.85  
 Pile N.    1    8    3    1    10    5

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT KN- M	MOMENT y-DIR KN- M	MOMENT z-DIR KN- M	SHEAR KN	SHEAR y-DIR KN/ M	SHEAR z-DIR KN/ M	SOIL REACT KN/ M**2	SOIL REACT STRESS KN/ M**2	TOTAL
Min.	-3.4981E-04	-5.6918E-06	-173.05	-216.96	-144.89	-37.596	-103.27	-14.249	1536.2		
Pile N.	14	8	15	3	3	3	3	15			
Max.	9.2216E-06	2.4360E-04	451.91	112.21	58.458	79.105	22.454	61.779	3308.8		
Pile N.	11	3	15	3	3	3	3	1			

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  
 34190.9    -5453.21    730.964    -267.113    6103.67    14481.0







\* 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  
 1.30636E-03    -1.57852E-03    1.99693E-04    -7.31428E-08    7.86416E-06    8.62215E-05

\* PILE TOP DISPLACEMENTS, GLOBAL \*  
 DISP. X, M    DISP. Y, M    DISP. Z, M    ROT. X,RAD    ROT. Y,RAD    ROT. Z,RAD  
 \*\*\*\*\*  
 MINIMUM    8.4758E-04    -1.5792E-03    1.9936E-04    -7.3143E-08    7.8642E-06    8.6221E-05  
 Pile N.    13    13    1    1    1    1  
 MAXIMUM    1.7651E-03    -1.5779E-03    2.0002E-04    -7.3143E-08    7.8642E-06    8.6221E-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    1482.3    -437.15    42.893    -0.024378    -167.72    -1215.3  
 Pile N.    13    3    8    1    3    3  
 MAXIMUM    3076.4    -319.16    58.524    -0.024378    -133.54    -960.11  
 Pile N.    3    8    3    1    7    8

\* PILE TOP DISPLACEMENTS, LOCAL \*  
 DISP. x, M    DISP. y, M    DISP. z, M    ROT. x,RAD    ROT. y,RAD    ROT. z,RAD  
 \*\*\*\*\*  
 MINIMUM    8.4758E-04    -1.5792E-03    1.9936E-04    -7.3143E-08    7.8642E-06    8.6221E-05  
 Pile N.    13    13    1    1    1    1  
 MAXIMUM    1.7651E-03    -1.5779E-03    2.0002E-04    -7.3143E-08    7.8642E-06    8.6221E-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    1482.3    -437.15    42.893    -0.024378    -167.72    -1215.3

<b>APPALTATORE:</b> Consorzio <span style="margin-left: 100px;">Soci</span>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>												
<b>PROGETTAZIONE:</b> Mandataria <span style="margin-left: 100px;">Mandanti</span>   													
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">COMMESSA</td> <td style="width: 10%;">LOTTO</td> <td style="width: 15%;">CODIFICA</td> <td style="width: 15%;">DOCUMENTO</td> <td style="width: 10%;">REV.</td> <td style="width: 10%;">FOGLIO</td> </tr> <tr> <td>IF28</td> <td>01</td> <td>E ZZ CL</td> <td>VI0403 001</td> <td>B</td> <td>194 di 354</td> </tr> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF28	01	E ZZ CL	VI0403 001	B	194 di 354
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO								
IF28	01	E ZZ CL	VI0403 001	B	194 di 354								

Pile N.	13	3	8	1	3	3		
MAXIMUM	3076.4	-319.16	58.524	-0.024378	-133.54	-960.11		
Pile N.	3	8	3	1	7	8		

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL.	DISPL.	MOMENT	MOMENT	SHEAR	SHEAR	SOIL REACT	SOIL REACT	TOTAL
y-Dir	z-Dir	z-Dir	y-Dir	y-Dir	z-Dir	y-Dir	z-Dir	STRESS	
M	M	KN-M	KN-M	KN	KN	KN/M	KN/M	KN/M**2	
Min.	-1.5792E-03	-4.1839E-06	-620.00	-167.72	-437.19	-25.517	-246.46	-8.6982	838.84
Pile N.	13	9	3	3	3	3	3	13	
Max.	3.2354E-05	2.0002E-04	1215.3	80.062	196.80	58.530	66.984	32.355	5443.5
Pile N.	12	3	3	3	3	3	3	3	

LOAD CASE : 11

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN-M	MOM Y, KN-M	MOM Z, KN-M
44370.3	-2223.28	774.978	-436.180	7724.01	-2124.15

\* 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
1.69697E-03	-4.87398E-04	1.84888E-04	-1.35266E-06	9.40927E-06	1.27764E-05

\* PILE TOP DISPLACEMENTS, GLOBAL \*

DISP. X, M DISP. Y, M DISP. Z, M ROT. X,RAD ROT. Y,RAD ROT. Z,RAD

MINIMUM	1.5548E-03	-4.9957E-04	1.7880E-04	-1.3527E-06	9.4093E-06	1.2776E-05
Pile N.	13	13	1	1	1	1
MAXIMUM	1.8391E-03	-4.7522E-04	1.9097E-04	-1.3527E-06	9.4093E-06	1.2776E-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	2711.0	-169.99	45.604	-0.4508	-168.06	-488.63
Pile N.	13	15	10	1	3	15
MAXIMUM	3205.0	-134.61	61.174	-0.4508	-132.83	-411.87
Pile N.	3	5	3	1	10	5

\* PILE TOP DISPLACEMENTS, LOCAL \*

DISP. x, M DISP. y, M DISP. z, M ROT. x,RAD ROT. y,RAD ROT. z,RAD

MINIMUM	1.5548E-03	-4.9957E-04	1.7880E-04	-1.3527E-06	9.4093E-06	1.2776E-05
Pile N.	13	13	1	1	1	1
MAXIMUM	1.8391E-03	-4.7522E-04	1.9097E-04	-1.3527E-06	9.4093E-06	1.2776E-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	2711.0	-169.99	45.604	-0.4508	-168.06	-488.63
Pile N.	13	15	10	1	3	15
MAXIMUM	3205.0	-134.61	61.174	-0.4508	-132.83	-411.87
Pile N.	3	5	3	1	10	5

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL.	DISPL.	MOMENT	MOMENT	SHEAR	SHEAR	SOIL REACT	SOIL REACT	TOTAL
y-Dir	z-Dir	z-Dir	y-Dir	y-Dir	z-Dir	y-Dir	z-Dir	STRESS	
M	M	KN-M	KN-M	KN	KN	KN/M	KN/M	KN/M**2	
Min.	-4.9957E-04	-4.3061E-06	-229.92	-168.06	-170.01	-29.121	-121.79	-11.078	1534.1
Pile N.	13	8	15	3	15	3	13		
Max.	1.1857E-05	1.9098E-04	488.63	86.810	76.542	61.180	29.110	46.171	3314.4
Pile N.	11	3	15	3	15	3	3		

LOAD CASE : 12

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN-M	MOM Y, KN-M	MOM Z, KN-M
39259.2	-3976.13	747.880	-74.4689	6801.50	-1210.87







\* 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
1.50084E-03	-9.58391E-04	1.89129E-04	3.03455E-07	8.51836E-06	3.04608E-05

\* PILE TOP DISPLACEMENTS, GLOBAL \*

DISP. X, M DISP. Y, M DISP. Z, M ROT. X,RAD ROT. Y,RAD ROT. Z,RAD

MINIMUM	1.2871E-03	-9.6112E-04	1.8776E-04	3.0346E-07	8.5184E-06	3.0461E-05
Pile N.	13	1	3	1	1	1
MAXIMUM	1.7146E-03	-9.5566E-04	1.9049E-04	3.0346E-07	8.5184E-06	3.0461E-05
Pile N.	3	13	1	1	1	1

<b>APPALTATORE:</b> Consorzio <span style="margin-left: 100px;">Soci</span>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>												
<b>PROGETTAZIONE:</b> Mandataria <span style="margin-left: 100px;">Mandanti</span>   													
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">COMMESSA</td> <td style="width: 10%;">LOTTO</td> <td style="width: 15%;">CODIFICA</td> <td style="width: 15%;">DOCUMENTO</td> <td style="width: 10%;">REV.</td> <td style="width: 10%;">FOGLIO</td> </tr> <tr> <td>IF28</td> <td>01</td> <td>E ZZ CL</td> <td>VI0403 001</td> <td>B</td> <td>195 di 354</td> </tr> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF28	01	E ZZ CL	VI0403 001	B	195 di 354
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO								
IF28	01	E ZZ CL	VI0403 001	B	195 di 354								

\* 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	2245.9	-303.17	45.510	0.1011	-158.65	-871.79
Pile N.	13	3	8	1	3	3
MAXIMUM	2988.6	-242.13	56.528	0.1011	-137.19	-748.36
Pile N.	3	11	3	1	8	11

\* PILE TOP DISPLACEMENTS, LOCAL \*

DISP. x, M DISP. y, M DISP. z, M ROT. x,RAD ROT. y,RAD ROT. z,RAD

MINIMUM	1.2871E-03	-9.6112E-04	1.8776E-04	3.0346E-07	8.5184E-06	3.0461E-05
Pile N.	13	1	3	1	1	1
MAXIMUM	1.7146E-03	-9.5566E-04	1.9049E-04	3.0346E-07	8.5184E-06	3.0461E-05
Pile N.	3	13	1	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

AXIAL, KN LAT. y, KN LAT. z, KN MOM x, KN- M MOM y, KN- M MOM z, KN- M

MINIMUM	2245.9	-303.17	45.510	0.1011	-158.65	-871.79
Pile N.	13	3	8	1	3	3
MAXIMUM	2988.6	-242.13	56.528	0.1011	-137.19	-748.36
Pile N.	3	11	3	1	8	11

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL.		MOMENT		SHEAR		SOIL REACT		TOTAL
	y-Dir	z-Dir	y-Dir	z-Dir	y-Dir	z-Dir	y-Dir	z-Dir	
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2
Min.	-9.6112E-04	-4.3921E-06	-409.59	-158.65	-303.20	-25.591	-188.21	-8.3963	1270.9
Pile N.	1	7	3	3	3	3	3	13	
Max.	2.2505E-05	1.9049E-04	871.79	78.634	133.38	56.533	43.916	35.672	4365.5
Pile N.	5	1	3	3	3	3	3	3	

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

27741.6	12049.6	87.4731	-28.2345	840.585	-46672.3
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\* 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

1.08818E-03	4.38710E-03	3.01995E-05	-4.06870E-07	1.24241E-06	-2.44314E-04
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\* PILE TOP DISPLACEMENTS, GLOBAL \*

DISP. X, M DISP. Y, M DISP. Z, M ROT. X,RAD ROT. Y,RAD ROT. Z,RAD

MINIMUM	-2.2412E-05	4.3834E-03	2.8369E-05	-4.0687E-07	1.2424E-06	-2.4431E-04
Pile N.	15	13	1	1	1	1
MAXIMUM	2.1988E-03	4.3908E-03	3.2030E-05	-4.0687E-07	1.2424E-06	-2.4431E-04
Pile N.	1	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	-36.753	703.80	5.1539	-0.1356	-19.358	2191.9
Pile N.	15	8	8	1	13	8
MAXIMUM	3678.1	968.29	6.5487	-0.1356	-16.698	2783.8
Pile N.	1	1	13	1	8	1

\* PILE TOP DISPLACEMENTS, LOCAL \*

DISP. x, M DISP. y, M DISP. z, M ROT. x,RAD ROT. y,RAD ROT. z,RAD

MINIMUM	-2.2412E-05	4.3834E-03	2.8369E-05	-4.0687E-07	1.2424E-06	-2.4431E-04
Pile N.	15	13	1	1	1	1
MAXIMUM	2.1988E-03	4.3908E-03	3.2030E-05	-4.0687E-07	1.2424E-06	-2.4431E-04
Pile N.	1	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	-36.753	703.80	5.1539	-0.1356	-19.358	2191.9
Pile N.	15	8	8	1	13	8
MAXIMUM	3678.1	968.29	6.5487	-0.1356	-16.698	2783.8
Pile N.	1	1	13	1	8	1

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL.		MOMENT		SHEAR		SOIL REACT		TOTAL
	y-Dir	z-Dir	y-Dir	z-Dir	y-Dir	z-Dir	y-Dir	z-Dir	
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2
Min.	-7.0396E-05	-5.2685E-07	-2783.8	-19.358	-365.80	-2.4141	-103.96	-0.6865	0.045232
Pile N.	5	9	1	13	1	13	1	3	
Max.	4.3908E-03	3.2030E-05	1314.5	8.6104	968.41	6.5495	416.53	2.7719	1.0483E+04
Pile N.	1	3	1	13	1	13	1	1	

<b>APPALTATORE:</b> Consorzio  Soci  	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>												
<b>PROGETTAZIONE:</b> Mandataria  Mandanti  													
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	<table border="1"> <tr> <td>COMMESSA</td> <td>LOTTO</td> <td>CODIFICA</td> <td>DOCUMENTO</td> <td>REV.</td> <td>FOGLIO</td> </tr> <tr> <td>IF28</td> <td>01</td> <td>E ZZ CL</td> <td>VI0403 001</td> <td>B</td> <td>196 di 354</td> </tr> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF28	01	E ZZ CL	VI0403 001	B	196 di 354
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO								
IF28	01	E ZZ CL	VI0403 001	B	196 di 354								

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
27688.8	-23711.8	87.4731	-10.4995	840.585	66338.1

\* 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
1.22958E-03	-0.0113105	3.98812E-05	2.21943E-07	1.28263E-06	4.87114E-04

\* PILE TOP DISPLACEMENTS, GLOBAL \*

DISP. X, M DISP. Y, M DISP. Z, M ROT. X,RAD ROT. Y,RAD ROT. Z,RAD

MINIMUM	-9.7398E-04	-0.011312	3.8882E-05	2.2194E-07	1.2826E-06	4.8711E-04
Pile N.	13	1	3	1	1	1
MAXIMUM	3.4331E-03	-0.011309	4.0880E-05	2.2194E-07	1.2826E-06	4.8711E-04
Pile N.	3	13	1	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

FOR. X, KN FOR. Y, KN FOR. Z, KN MOM X, KN- M MOM Y, KN- M MOM Z, KN- M

MINIMUM	-1590.1	-1907.6	5.1226	0.073973	-22.756	-6201.5
Pile N.	13	3	8	1	15	3
MAXIMUM	4975.2	-1382.1	6.8344	0.073973	-18.637	-4878.1
Pile N.	3	8	15	1	8	8

\* PILE TOP DISPLACEMENTS, LOCAL \*

DISP. x, M DISP. y, M DISP. z, M ROT. x,RAD ROT. y,RAD ROT. z,RAD

MINIMUM	-9.7398E-04	-0.011312	3.8882E-05	2.2194E-07	1.2826E-06	4.8711E-04
Pile N.	13	1	3	1	1	1
MAXIMUM	3.4331E-03	-0.011309	4.0880E-05	2.2194E-07	1.2826E-06	4.8711E-04
Pile N.	3	13	1	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

AXIAL, KN LAT. y, KN LAT. z, KN MOM x, KN- M MOM y, KN- M MOM z, KN- M

MINIMUM	-1590.1	-1907.6	5.1226	0.073973	-22.756	-6201.5
Pile N.	13	3	8	1	15	3
MAXIMUM	4975.2	-1382.1	6.8344	0.073973	-18.637	-4878.1
Pile N.	3	8	15	1	8	8

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT KN- M	MOMENT y-DIR KN- M	MOMENT z-DIR KN- M	SHEAR KN	SHEAR y-DIR KN/ M	SHEAR z-DIR KN/ M	SOIL REACT KN/ M**2	SOIL REACT	TOTAL
Min.	-0.011312	-6.7107E-07	-2732.1	-22.756	-1908.0	-2.3632	-714.21	-0.5816	878.53		
Pile N.	1	7	3	15	3	15	3	15	1		
Max.	1.8217E-04	4.0880E-05	6201.5	9.4916	674.97	6.8357	165.88	2.5171	2.1532E+04		
Pile N.	8	1	3	15	3	15	3	15	3		

LOAD CASE : 15

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

LOAD X, KN	LOAD Y, KN	LOAD Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
27688.8	-3499.85	-15401.8	-5909.51	-53198.5	776.794

\* 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
1.06166E-03	-1.30068E-03	-5.56964E-03	-3.01267E-05	-1.01061E-04	3.66925E-05

\* PILE TOP DISPLACEMENTS, GLOBAL \*

DISP. X, M DISP. Y, M DISP. Z, M ROT. X,RAD ROT. Y,RAD ROT. Z,RAD

MINIMUM	-1.3002E-05	-1.5718E-03	-5.7052E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
Pile N.	1	13	1	1	1	1
MAXIMUM	2.1363E-03	-1.0295E-03	-5.4341E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
Pile N.	15	1	3	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*







FOR. X, KN FOR. Y, KN FOR. Z, KN MOM X, KN- M MOM Y, KN- M MOM Z, KN- M

MINIMUM	-21.322	-352.40	-1276.7	-10.041	3174.0	-1121.1
Pile N.	1	15	13	1	8	15
MAXIMUM	3612.5	-160.66	-889.65	-10.041	4132.9	-542.57
Pile N.	15	2	8	1	13	2

\* PILE TOP DISPLACEMENTS, LOCAL \*

DISP. x, M DISP. y, M DISP. z, M ROT. x,RAD ROT. y,RAD ROT. z,RAD

MINIMUM	-1.3002E-05	-1.5718E-03	-5.7052E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
Pile N.	1	13	1	1	1	1
MAXIMUM	2.1363E-03	-1.0295E-03	-5.4341E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
Pile N.	15	1	3	1	1	1

<b>APPALTATORE:</b> Consorzio  Soci  	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>												
<b>PROGETTAZIONE:</b> Mandataria  Mandanti  													
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">COMMESSA</td> <td style="width: 10%;">LOTTO</td> <td style="width: 15%;">CODIFICA</td> <td style="width: 15%;">DOCUMENTO</td> <td style="width: 10%;">REV.</td> <td style="width: 10%;">FOGLIO</td> </tr> <tr> <td>IF28</td> <td>01</td> <td>E Z CL</td> <td>VI0403 001</td> <td>B</td> <td>197 di 354</td> </tr> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF28	01	E Z CL	VI0403 001	B	197 di 354
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO								
IF28	01	E Z CL	VI0403 001	B	197 di 354								

\* 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	-21.322	-352.40	-1276.7	-10.041	3174.0	-1121.1
Pile N.	1	15	13	1	8	15
MAXIMUM	3612.5	-160.66	-889.65	-10.041	4132.9	-542.57
Pile N.	15	2	8	1	13	2

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR z-DIR	SHEAR y-DIR	SOIL REACT z-DIR	SOIL REACT y-DIR	TOTAL
	M	M	KN- M	KN- M	KN	KN/ M	KN/ M	KN/ M**2	
Min.	-1.5718E-03	-5.7052E-03	-450.87	-1620.8	-352.44	-1276.8	-139.72	-497.48	12.066
Pile N.	13	1	15	13	15	13	15	13	1
Max.	2.4915E-05	9.2360E-05	1121.1	4132.9	123.26	439.15	33.085	116.85	1.4692E+04
Pile N.	14	1	15	13	15	13	15	13	13

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
27688.8	-3499.85	15576.7	5867.83	54879.7	777.010

\* 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
1.06271E-03	-1.30868E-03	5.66922E-03	3.01946E-05	1.03552E-04	3.69989E-05

\* PILE TOP DISPLACEMENTS, GLOBAL \*

DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	-3.5751E-05	-1.5804E-03	5.5333E-03	3.0195E-05	1.0355E-04
Pile N.	13	1	3	1	1
MAXIMUM	2.1612E-03	-1.0369E-03	5.8051E-03	3.0195E-05	1.0355E-04
Pile N.	3	13	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

FOR. X, KN	FOR. Y, KN	FOR. Z, KN	MOM X, KN- M	MOM Y, KN- M	MOM Z, KN- M
MINIMUM	-58.627	-352.40	900.34	10.064	-4189.1
Pile N.	13	3	8	1	3
MAXIMUM	3638.6	-160.89	1292.2	10.064	-3216.9
Pile N.	3	14	1	8	14

\* PILE TOP DISPLACEMENTS, LOCAL \*

DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	-3.5751E-05	-1.5804E-03	5.5333E-03	3.0195E-05	1.0355E-04
Pile N.	13	1	3	1	1
MAXIMUM	2.1612E-03	-1.0369E-03	5.8051E-03	3.0195E-05	1.0355E-04
Pile N.	3	13	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

AXIAL, KN	LAT. y, KN	LAT. z, KN	MOM x, KN- M	MOM y, KN- M	MOM z, KN- M
MINIMUM	-58.627	-352.40	900.34	10.064	-4189.1
Pile N.	13	3	8	1	3
MAXIMUM	3638.6	-160.89	1292.2	10.064	-3216.9
Pile N.	3	14	1	8	14

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR z-DIR	SHEAR y-DIR	SOIL REACT z-DIR	SOIL REACT y-DIR	TOTAL
	M	M	KN- M	KN- M	KN	KN/ M	KN/ M	KN/ M**2	
Min.	-1.5804E-03	-9.2209E-05	-451.68	-4189.1	-352.45	-444.79	-139.46	-118.01	33.176
Pile N.	1	1	3	1	3	1	13	1	13
Max.	2.5045E-05	5.8051E-03	1123.0	1643.5	123.25	1292.4	32.982	502.67	1.4879E+04
Pile N.	2	1	3	1	3	1	1	1	1

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
23041.1	-9563.44	87.4731	-17.7378	836.966	22388.8

\* 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
8.79317E-04	-3.09048E-03	2.73603E-05	9.31831E-08	1.04295E-06	1.45241E-04

\* PILE TOP DISPLACEMENTS, GLOBAL \*

DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD

<b>APPALTATORE:</b> Consorzio <span style="margin-left: 100px;">Soci</span>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>												
<b>PROGETTAZIONE:</b> Mandataria <span style="margin-left: 100px;">Mandanti</span>   													
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">COMMESSA</td> <td style="width: 10%;">LOTTO</td> <td style="width: 15%;">CODIFICA</td> <td style="width: 15%;">DOCUMENTO</td> <td style="width: 10%;">REV.</td> <td style="width: 35%;">FOGLIO</td> </tr> <tr> <td>IF28</td> <td>01</td> <td>E ZZ CL</td> <td>VI0403 001</td> <td>B</td> <td>198 di 354</td> </tr> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF28	01	E ZZ CL	VI0403 001	B	198 di 354
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO								
IF28	01	E ZZ CL	VI0403 001	B	198 di 354								

MINIMUM	2.1635E-04	-3.0913E-03	2.6941E-05	9.3183E-08	1.0429E-06	1.4524E-04
Pile N.	13	1	3	1	1	1
MAXIMUM	1.5423E-03	-3.0896E-03	2.7780E-05	9.3183E-08	1.0429E-06	1.4524E-04
Pile N.	3	13	1	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*  
 FOR. X, KN FOR. Y, KN FOR. Z, KN MOM X, KN- M MOM Y, KN- M MOM Z, KN- M

MINIMUM	381.22	-768.94	5.1265	0.031058	-20.204	-2210.9
Pile N.	13	3	8	1	15	3
MAXIMUM	2689.3	-558.73	6.9054	0.031058	-16.354	-1744.0
Pile N.	3	8	15	1	8	8

\* PILE TOP DISPLACEMENTS, LOCAL \*  
 DISP. x, M DISP. y, M DISP. z, M ROT. x,RAD ROT. y,RAD ROT. z,RAD

MINIMUM	2.1635E-04	-3.0913E-03	2.6941E-05	9.3183E-08	1.0429E-06	1.4524E-04
Pile N.	13	1	3	1	1	1
MAXIMUM	1.5423E-03	-3.0896E-03	2.7780E-05	9.3183E-08	1.0429E-06	1.4524E-04
Pile N.	3	13	1	1	1	1

\* PILE TOP REACTIONS, LOCAL \*  
 AXIAL, KN LAT. y, KN LAT. z, KN MOM x, KN- M MOM y, KN- M MOM z, KN- M

MINIMUM	381.22	-768.94	5.1265	0.031058	-20.204	-2210.9
Pile N.	13	3	8	1	15	3
MAXIMUM	2689.3	-558.73	6.9054	0.031058	-16.354	-1744.0
Pile N.	3	8	15	1	8	8

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	MOMENT z-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT z-DIR	SOIL REACT y-DIR	TOTAL
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2	
Min.	-3.0913E-03	-4.7001E-07	-1024.3	-20.204	-769.01	-2.6666	-350.01	-0.8139	215.73	
Pile N.	1	6	3	15	3	15	3	13		
Max.	5.3302E-05	2.7780E-05	2210.9	9.0143	301.67	6.9060	92.083	3.1107	8194.7	
Pile N.	6	1	3	15	3	15	3	3		

LOAD CASE : 18

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*  
 LOAD X, KN LOAD Y, KN LOAD Z, KN MOM X, KN- M MOM Y, KN- M MOM Z, KN- M

36372.9	1824.78	87.4731	-20.9962	847.306	-20082.9
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\* 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

1.39009E-03	5.72868E-04	2.05053E-05	-1.66400E-07	1.03830E-06	-6.91140E-05
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\* PILE TOP DISPLACEMENTS, GLOBAL \*  
 DISP. X, M DISP. Y, M DISP. Z, M ROT. X,RAD ROT. Y,RAD ROT. Z,RAD

MINIMUM	1.0697E-03	5.7137E-04	1.9756E-05	-1.6640E-07	1.0383E-06	-6.9114E-05
Pile N.	15	13	1	1	1	1
MAXIMUM	1.7104E-03	5.7437E-04	2.1254E-05	-1.6640E-07	1.0383E-06	-6.9114E-05
Pile N.	1	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	1868.3	110.05	5.3577	-0.055461	-17.324	259.37
Pile N.	15	11	8	1	13	11
MAXIMUM	2981.4	141.05	6.3615	-0.055461	-15.630	319.90
Pile N.	1	1	13	1	8	1

\* PILE TOP DISPLACEMENTS, LOCAL \*  
 DISP. x, M DISP. y, M DISP. z, M ROT. x,RAD ROT. y,RAD ROT. z,RAD







MINIMUM	1.0697E-03	5.7137E-04	1.9756E-05	-1.6640E-07	1.0383E-06	-6.9114E-05
Pile N.	15	13	1	1	1	1
MAXIMUM	1.7104E-03	5.7437E-04	2.1254E-05	-1.6640E-07	1.0383E-06	-6.9114E-05
Pile N.	1	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	1868.3	110.05	5.3577	-0.055461	-17.324	259.37
Pile N.	15	11	8	1	13	11
MAXIMUM	2981.4	141.05	6.3615	-0.055461	-15.630	319.90
Pile N.	1	1	13	1	8	1

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	MOMENT z-DIR	SHEAR y-DIR	SHEAR z-DIR	SOIL REACT z-DIR	SOIL REACT y-DIR	TOTAL
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2	
Min.	-3.0913E-03	-4.7001E-07	-1024.3	-20.204	-769.01	-2.6666	-350.01	-0.8139	215.73	
Pile N.	1	6	3	15	3	15	3	13		
Max.	5.3302E-05	2.7780E-05	2210.9	9.0143	301.67	6.9060	92.083	3.1107	8194.7	
Pile N.	6	1	3	15	3	15	3	3		

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	
COMMESSA <b>IF28</b> LOTTO <b>01</b> CODIFICA <b>E ZZ CL</b> DOCUMENTO <b>VI0403 001</b> REV. <b>B</b> FOGLIO <b>199 di 354</b>	

Min. -1.2452E-05	-5.0683E-07	-319.90	-17.324	-82.008	-3.0818	-30.597	-1.1635	1057.2
Pile N. 5	9	1	13	1	13	1	13	15
Max. 5.7437E-04	2.1254E-05	245.92	9.1532	141.07	6.3621	120.80	4.9125	2654.0
Pile N. 1	3	1	13	1	13	1	13	1

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
31672.5	-3499.85	15576.7	5867.83	54882.8	-888.974

\* 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
1.22604E-03	-1.29667E-03	5.68020E-03	3.01870E-05	1.05948E-04	3.34479E-05

\* PILE TOP DISPLACEMENTS, GLOBAL \*

DISP. X, M    DISP. Y, M    DISP. Z, M    ROT. X,RAD    ROT. Y,RAD    ROT. Z,RAD

MINIMUM	1.2199E-04	-1.5684E-03	5.5444E-03	3.0187E-05	1.0595E-04	3.3448E-05
Pile N. 13	1	3	1	1	1	1
MAXIMUM	2.3301E-03	-1.0250E-03	5.8160E-03	3.0187E-05	1.0595E-04	3.3448E-05
Pile N. 3	13	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	214.96	-352.21	900.27	10.061	-4188.3	-1127.0
Pile N. 13	3	8	1	1	3	
MAXIMUM	3816.1	-160.98	1292.6	10.061	-3214.9	-548.77
Pile N. 3	14	1	1	8	14	

\* PILE TOP DISPLACEMENTS, LOCAL \*

DISP. x, M    DISP. y, M    DISP. z, M    ROT. x,RAD    ROT. y,RAD    ROT. z,RAD

MINIMUM	1.2199E-04	-1.5684E-03	5.5444E-03	3.0187E-05	1.0595E-04	3.3448E-05
Pile N. 13	1	3	1	1	1	1
MAXIMUM	2.3301E-03	-1.0250E-03	5.8160E-03	3.0187E-05	1.0595E-04	3.3448E-05
Pile N. 3	13	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	214.96	-352.21	900.27	10.061	-4188.3	-1127.0
Pile N. 13	3	8	1	1	3	
MAXIMUM	3816.1	-160.98	1292.6	10.061	-3214.9	-548.77
Pile N. 3	14	1	1	8	14	

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	SHEAR z-DIR	SHEAR y-DIR	SOIL REACT z-DIR	SOIL REACT y-DIR	TOTAL
	M	M	KN- M	KN- M	KN	KN/ M	KN/ M	KN/ M**2	
Min.	-1.5683E-03	-9.2384E-05	-449.35	-4188.3	-352.26	-445.44	-139.01	-118.17	121.64
Pile N. 1	1	1	3	1	3	1	13		
Max.	2.4950E-05	5.8160E-03	1127.0	1646.0	122.75	1292.8	32.847	503.14	1.5058E+04
Pile N. 2	1	3	1	3	1	3	1	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
27688.8	-3499.85	-15401.8	-5909.51	-53198.5	776.794

\* 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
1.06166E-03	-1.30068E-03	-5.56964E-03	-3.01267E-05	-1.01061E-04	3.66925E-05

\* PILE TOP DISPLACEMENTS, GLOBAL \*

DISP. X, M    DISP. Y, M    DISP. Z, M    ROT. X,RAD    ROT. Y,RAD    ROT. Z,RAD

MINIMUM	-1.3002E-05	-1.5718E-03	-5.7052E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
Pile N. 1	13	1	1	1	1	
MAXIMUM	2.1363E-03	-1.0295E-03	-5.4341E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
Pile N. 15	1	3	1	1	1	





\* PILE TOP REACTIONS, GLOBAL \*

FOR. X, KN    FOR. Y, KN    FOR. Z, KN    MOM X, KN- M    MOM Y, KN- M    MOM Z, KN- M

MINIMUM	-21.322	-352.40	-1276.7	-10.041	3174.0	-1121.1
Pile N. 1	15	13	1	8	15	
MAXIMUM	3612.5	-160.66	-889.65	-10.041	4132.9	-542.57
Pile N. 15	2	8	1	13	2	

\* PILE TOP DISPLACEMENTS, LOCAL \*

DISP. x, M    DISP. y, M    DISP. z, M    ROT. x,RAD    ROT. y,RAD    ROT. z,RAD

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>											
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   												
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>												
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">COMMESSA</td> <td style="width: 10%;">LOTTO</td> <td style="width: 15%;">CODIFICA</td> <td style="width: 15%;">DOCUMENTO</td> <td style="width: 10%;">REV.</td> <td style="width: 10%;">FOGLIO</td> </tr> <tr> <td>IF28</td> <td>01</td> <td>E Z Z CL</td> <td>VI0403 001</td> <td>B</td> <td>200 di 354</td> </tr> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF28	01	E Z Z CL	VI0403 001	B	200 di 354
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO							
IF28	01	E Z Z CL	VI0403 001	B	200 di 354							

```

*****
MINIMUM -1.3002E-05 -1.5718E-03 -5.7052E-03 -3.0127E-05 -1.0106E-04 3.6693E-05
Pile N. 1 13 1 1 1 1
MAXIMUM 2.1363E-03 -1.0295E-03 -5.4341E-03 -3.0127E-05 -1.0106E-04 3.6693E-05
Pile N. 15 1 3 1 1 1

```

\* PILE TOP REACTIONS, LOCAL \*  
 AXIAL, KN LAT. y, KN LAT. z, KN MOM x, KN- M MOM y, KN- M MOM z, KN- M

```

*****
MINIMUM -21.322 -352.40 -1276.7 -10.041 3174.0 -1121.1
Pile N. 1 15 13 1 8 15
MAXIMUM 3612.5 -160.66 -889.65 -10.041 4132.9 -542.57
Pile N. 15 2 8 1 13 2

```

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	MOMENT x-DIR	SHEAR z-DIR	SHEAR y-DIR	SOIL REACT z-DIR	SOIL REACT y-DIR	TOTAL
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2	
Min.	-1.5718E-03	-5.7052E-03	-450.87	-1620.8	-352.44	-1276.8	-139.72	-497.48	12.066	
Pile N.	13	1	15	13	15	13	15	13	1	
Max.	2.4915E-05	9.2360E-05	1121.1	4132.9	123.26	439.15	33.085	116.85	1.4692E+04	
Pile N.	14	1	15	13	15	13	13	13		

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  
 31725.3 12049.6 87.4731 -28.2345 843.687 -48338.5

\* 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  
 1.27440E-03 4.44753E-03 3.01602E-05 -4.07398E-07 1.21335E-06 -2.59690E-04

\* PILE TOP DISPLACEMENTS, GLOBAL \*  
 DISP. X, M DISP. Y, M DISP. Z, M ROT. X,RAD ROT. Y,RAD ROT. Z,RAD

```

*****
MINIMUM 9.4876E-05 4.4439E-03 2.8327E-05 -4.0740E-07 1.2133E-06 -2.5969E-04
Pile N. 15 13 1 1 1 1
MAXIMUM 2.4539E-03 4.4512E-03 3.1993E-05 -4.0740E-07 1.2133E-06 -2.5969E-04
Pile N. 1 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 167.18 703.34 5.1546 -0.1358 -19.417 2175.2
Pile N. 15 8 8 1 13 8
MAXIMUM 3946.2 969.06 6.5479 -0.1358 -16.756 2769.8
Pile N. 1 1 13 1 8 1

```

\* PILE TOP DISPLACEMENTS, LOCAL \*  
 DISP. x, M DISP. y, M DISP. z, M ROT. x,RAD ROT. y,RAD ROT. z,RAD

```

*****
MINIMUM 9.4876E-05 4.4439E-03 2.8327E-05 -4.0740E-07 1.2133E-06 -2.5969E-04
Pile N. 15 13 1 1 1 1
MAXIMUM 2.4539E-03 4.4512E-03 3.1993E-05 -4.0740E-07 1.2133E-06 -2.5969E-04
Pile N. 1 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 167.18 703.34 5.1546 -0.1358 -19.417 2175.2
Pile N. 15 8 8 1 13 8
MAXIMUM 3946.2 969.06 6.5479 -0.1358 -16.756 2769.8
Pile N. 1 1 13 1 8 1

```

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT z-DIR	MOMENT y-DIR	MOMENT x-DIR	SHEAR z-DIR	SHEAR y-DIR	SOIL REACT z-DIR	SOIL REACT y-DIR	TOTAL
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2	
Min.	-7.1302E-05	-5.2873E-07	-2769.8	-19.417	-368.93	-2.4134	-104.72	-0.6854	94.605	
Pile N.	5	9	1	13	1	13	1	13	15	
Max.	4.4512E-03	3.1993E-05	1327.8	8.6002	969.19	6.5487	418.12	2.7653	1.0593E+04	
Pile N.	1	3	1	13	1	13	1	13	1	

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  
 27688.8 -23711.8 87.4731 -10.4995 840.585 66338.4

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*  
 DISP X, M DISP Y, M DISP Z, M ROT X,RAD ROT Y,RAD ROT Z,RAD



<b>APPALTATORE:</b> Consorzio  Soci  	<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria  Mandanti  						
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	COMMESSA <b>IF28</b>	LOTTO <b>01</b>	CODIFICA <b>E ZZ CL</b>	DOCUMENTO <b>VI0403 001</b>	REV. <b>B</b>	FOGLIO <b>201 di 354</b>

1.22958E-03 -0.0113105 3.98812E-05 2.21943E-07 1.28263E-06 4.87115E-04

**\* PILE TOP DISPLACEMENTS, GLOBAL \***

DISP. X, M DISP. Y, M DISP. Z, M ROT. X,RAD ROT. Y,RAD ROT. Z,RAD

MINIMUM	-9.7398E-04	-0.011312	3.8882E-05	2.2194E-07	1.2826E-06	4.8711E-04
Pile N.	13	1	3	1	1	1
MAXIMUM	3.4331E-03	-0.011309	4.0880E-05	2.2194E-07	1.2826E-06	4.8711E-04
Pile N.	3	13	1	1	1	1

**\* PILE TOP REACTIONS, GLOBAL \***

FOR. X, KN FOR. Y, KN FOR. Z, KN MOM X, KN- M MOM Y, KN- M MOM Z, KN- M

MINIMUM	-1590.1	-1907.6	5.1226	0.073973	-22.756	-6201.5
Pile N.	13	3	8	1	15	3
MAXIMUM	4975.2	-1382.1	6.8344	0.073973	-18.637	-4878.1
Pile N.	3	8	15	1	8	8

**\* PILE TOP DISPLACEMENTS, LOCAL \***

DISP. x, M DISP. y, M DISP. z, M ROT. x,RAD ROT. y,RAD ROT. z,RAD

MINIMUM	-9.7398E-04	-0.011312	3.8882E-05	2.2194E-07	1.2826E-06	4.8711E-04
Pile N.	13	1	3	1	1	1
MAXIMUM	3.4331E-03	-0.011309	4.0880E-05	2.2194E-07	1.2826E-06	4.8711E-04
Pile N.	3	13	1	1	1	1

**\* PILE TOP REACTIONS, LOCAL \***

AXIAL, KN LAT. y, KN LAT. z, KN MOM x, KN- M MOM y, KN- M MOM z, KN- M

MINIMUM	-1590.1	-1907.6	5.1226	0.073973	-22.756	-6201.5
Pile N.	13	3	8	1	15	3
MAXIMUM	4975.2	-1382.1	6.8344	0.073973	-18.637	-4878.1
Pile N.	3	8	15	1	8	8

**\* EFFECTS FOR LATERALLY LOADED PILE \***

PILE	DISPL. y-DIR	DISPL. z-DIR	MOMENT KN-M	MOMENT y-DIR KN-M	MOMENT z-DIR KN-M	SHEAR KN	SHEAR y-DIR KN/M	SHEAR z-DIR KN/M	SOIL REACT KN/M**2	SOIL REACT STRESS	TOTAL
Min.	-0.011312	-6.7107E-07	-2732.1	-22.756	-1908.0	-2.3632	-714.21	-0.5816	878.54		
Pile N.	1	7	3	15	3	15	3	15	1		
Max.	1.8217E-04	4.0880E-05	6201.5	9.4916	674.97	6.8357	165.88	2.5171	2.1532E+04		
Pile N.	8	1	3	15	3	15	3	15	3		

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

27688.8 -3499.85 -15401.8 -5909.51 -53198.5 777.010

**\* 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

1.06166E-03 -1.30069E-03 -5.56964E-03 -3.01267E-05 -1.01061E-04 3.66931E-05

**\* PILE TOP DISPLACEMENTS, GLOBAL \***

DISP. X, M DISP. Y, M DISP. Z, M ROT. X,RAD ROT. Y,RAD ROT. Z,RAD

MINIMUM	-1.3005E-05	-1.5718E-03	-5.7052E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
Pile N.	1	13	1	1	1	1
MAXIMUM	2.1363E-03	-1.0295E-03	-5.4341E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
Pile N.	15	1	3	1	1	1

**\* PILE TOP REACTIONS, GLOBAL \***

FOR. X, KN FOR. Y, KN FOR. Z, KN MOM X, KN- M MOM Y, KN- M MOM Z, KN- M

MINIMUM	-21.327	-352.40	-1276.7	-10.041	3174.0	-1121.1
Pile N.	1	15	13	1	8	15
MAXIMUM	3612.5	-160.66	-889.65	-10.041	4132.9	-542.57
Pile N.	15	2	8	1	13	2

**\* PILE TOP DISPLACEMENTS, LOCAL \***

DISP. x, M DISP. y, M DISP. z, M ROT. x,RAD ROT. y,RAD ROT. z,RAD







MINIMUM	-1.3005E-05	-1.5718E-03	-5.7052E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
Pile N.	1	13	1	1	1	1
MAXIMUM	2.1363E-03	-1.0295E-03	-5.4341E-03	-3.0127E-05	-1.0106E-04	3.6693E-05
Pile N.	15	1	3	1	1	1

**\* PILE TOP REACTIONS, LOCAL \***

AXIAL, KN LAT. y, KN LAT. z, KN MOM x, KN- M MOM y, KN- M MOM z, KN- M

MINIMUM	-21.327	-352.40	-1276.7	-10.041	3174.0	-1121.1
Pile N.	1	15	13	1	8	15
MAXIMUM	3612.5	-160.66	-889.65	-10.041	4132.9	-542.57
Pile N.	15	2	8	1	13	2

**\* EFFECTS FOR LATERALLY LOADED PILE \***

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> <b>Mandataria</b> <b>Mandanti</b>   	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	COMMESSA <b>IF28</b> LOTTO <b>01</b> CODIFICA <b>E ZZ CL</b> DOCUMENTO <b>VI0403 001</b> REV. <b>B</b> FOGLIO <b>202 di 354</b>

PILE	DISPL.	DISPL.	MOMENT	MOMENT	SHEAR	SHEAR	SOIL REACT	SOIL REACT	TOTAL
	y-DIR	z-DIR	z-DIR	y-DIR	y-DIR	z-DIR	y-DIR	z-DIR	STRESS
	M	M	KN-M	KN-M	KN	KN	KN/M	KN/M	KN/M**2
Min.	-1.5718E-03	-5.7052E-03	-450.87	-1620.8	-352.44	-1276.8	-139.72	-497.48	12.069
Pile N.	13	1	15	13	15	13	15	13	
Max.	2.4915E-05	9.2360E-05	1121.1	4132.9	123.26	439.15	33.085	116.85	1.4692E+04
Pile N.	14	1	15	13	15	13	15	13	

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
31672.5	-3499.85	15576.7	5867.83	54882.8	-889.190

\* 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
1.22604E-03	-1.29666E-03	5.68020E-03	3.01870E-05	1.05948E-04	3.34473E-05

\* PILE TOP DISPLACEMENTS, GLOBAL \*

DISP. X, M    DISP. Y, M    DISP. Z, M    ROT. X,RAD    ROT. Y,RAD    ROT. Z,RAD

MINIMUM	1.2200E-04	-1.5684E-03	5.5444E-03	3.0187E-05	1.0595E-04	3.3447E-05
Pile N.	13	1	3	1	1	1
MAXIMUM	2.3301E-03	-1.0250E-03	5.8160E-03	3.0187E-05	1.0595E-04	3.3447E-05
Pile N.	3	13	1	1	1	1

\* PILE TOP REACTIONS, GLOBAL \*

FOR. X, KN    FOR. Y, KN    FOR. Z, KN    MOM X, KN-M    MOM Y, KN-M    MOM Z, KN-M

MINIMUM	214.97	-352.21	900.27	10.061	-4188.3	-1127.0
Pile N.	13	3	8	1	3	1
MAXIMUM	3816.1	-160.98	1292.6	10.061	-3214.9	-548.77
Pile N.	3	14	1	1	8	14

\* PILE TOP DISPLACEMENTS, LOCAL \*

DISP. x, M    DISP. y, M    DISP. z, M    ROT. x,RAD    ROT. y,RAD    ROT. z,RAD

MINIMUM	1.2200E-04	-1.5684E-03	5.5444E-03	3.0187E-05	1.0595E-04	3.3447E-05
Pile N.	13	1	3	1	1	1
MAXIMUM	2.3301E-03	-1.0250E-03	5.8160E-03	3.0187E-05	1.0595E-04	3.3447E-05
Pile N.	3	13	1	1	1	1

\* PILE TOP REACTIONS, LOCAL \*

AXIAL, KN    LAT. y, KN    LAT. z, KN    MOM x, KN-M    MOM y, KN-M    MOM z, KN-M

MINIMUM	214.97	-352.21	900.27	10.061	-4188.3	-1127.0
Pile N.	13	3	8	1	3	1
MAXIMUM	3816.1	-160.98	1292.6	10.061	-3214.9	-548.77
Pile N.	3	14	1	1	8	14

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL.	DISPL.	MOMENT	MOMENT	SHEAR	SHEAR	SOIL REACT	SOIL REACT	TOTAL
	y-DIR	z-DIR	z-DIR	y-DIR	y-DIR	z-DIR	y-DIR	z-DIR	STRESS
	M	M	KN-M	KN-M	KN	KN	KN/M	KN/M	KN/M**2
Min.	-1.5683E-03	-9.2384E-05	-449.35	-4188.3	-352.26	-445.44	-139.01	-118.17	121.65
Pile N.	1	1	3	1	3	1	3	1	13
Max.	2.4950E-05	5.8160E-03	1127.0	1646.0	122.75	1292.8	32.847	503.14	1.5058E+04
Pile N.	2	1	3	1	3	1	3	1	1

### 13.3 SPALLA B 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

<b>APPALTATORE:</b> Consorzio <span style="margin-left: 100px;">Soci</span>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>												
<b>PROGETTAZIONE:</b> Mandataria <span style="margin-left: 100px;">Mandanti</span>   													
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">COMMESSA</td> <td style="width: 10%;">LOTTO</td> <td style="width: 15%;">CODIFICA</td> <td style="width: 15%;">DOCUMENTO</td> <td style="width: 10%;">REV.</td> <td style="width: 10%;">FOGLIO</td> </tr> <tr> <td>IF28</td> <td>01</td> <td>E ZZ CL</td> <td>VI0403 001</td> <td>B</td> <td>203 di 354</td> </tr> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF28	01	E ZZ CL	VI0403 001	B	203 di 354
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO								
IF28	01	E ZZ CL	VI0403 001	B	203 di 354								

Date: July 08, 2020 Time: 10:48:40

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

New Group

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

LOAD CASE : 1  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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	0.5904	1.0000
2	0.5499	1.0000
3	0.5836	1.0000
4	0.8661	1.0000
5	0.4970	1.0000
6	0.4621	1.0000
7	0.4951	1.0000
8	0.8020	1.0000
9	0.4954	1.0000
10	0.4606	1.0000
11	0.4935	1.0000
12	0.8016	1.0000
13	0.4964	1.0000
14	0.4615	1.0000
15	0.4946	1.0000
16	0.8016	1.0000
17	0.5845	1.0000
18	0.5437	1.0000
19	0.5778	1.0000
20	0.8621	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
47948.6	-4220.31	641.508
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-1906.87	6010.77	59515.1

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
1.48429E-03	-1.19784E-03	1.56881E-04
ANGLE ROT. X,RAD	ANGLE ROT. Y,RAD	ANGLE ROT. Z,RAD
-5.09422E-06	6.45556E-06	9.02560E-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	9.3316E-04	-1.1520E-03	1.2249E-04	-5.0942E-06	6.4556E-06	9.0256E-05
2	1.3393E-03	-1.1520E-03	1.4542E-04	-5.0942E-06	6.4556E-06	9.0256E-05
3	1.7455E-03	-1.1520E-03	1.6834E-04	-5.0942E-06	6.4556E-06	9.0256E-05
4	2.2516E-03	-1.1520E-03	1.9127E-04	-5.0942E-06	6.4556E-06	9.0256E-05
5	9.0411E-04	-1.1749E-03	1.2249E-04	-5.0942E-06	6.4556E-06	9.0256E-05
6	1.3103E-03	-1.1749E-03	1.4542E-04	-5.0942E-06	6.4556E-06	9.0256E-05
7	1.7164E-03	-1.1749E-03	1.6834E-04	-5.0942E-06	6.4556E-06	9.0256E-05
8	2.1226E-03	-1.1749E-03	1.9127E-04	-5.0942E-06	6.4556E-06	9.0256E-05

APPALTATORE:

Consorzio

Soci



ITINERARIO NAPOLI – BARI

RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

PROGETTAZIONE:

Mandatario

Mandanti



PROGETTO ESECUTIVO

RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO
IF28	01	E ZZ CL	VI0403 001	B	204 di 354

9	8.7506E-04	-1.1978E-03	1.2249E-04	-5.0942E-06	6.4556E-06	9.0256E-05
10	1.2812E-03	-1.1978E-03	1.4542E-04	-5.0942E-06	6.4556E-06	9.0256E-05
11	1.6874E-03	-1.1978E-03	1.6834E-04	-5.0942E-06	6.4556E-06	9.0256E-05
12	2.0935E-03	-1.1978E-03	1.9127E-04	-5.0942E-06	6.4556E-06	9.0256E-05
13	8.4601E-04	-1.2208E-03	1.2249E-04	-5.0942E-06	6.4556E-06	9.0256E-05
14	1.2522E-03	-1.2208E-03	1.4542E-04	-5.0942E-06	6.4556E-06	9.0256E-05
15	1.6583E-03	-1.2208E-03	1.6834E-04	-5.0942E-06	6.4556E-06	9.0256E-05
16	2.0645E-03	-1.2208E-03	1.9127E-04	-5.0942E-06	6.4556E-06	9.0256E-05
17	8.1696E-04	-1.2437E-03	1.2249E-04	-5.0942E-06	6.4556E-06	9.0256E-05
18	1.2231E-03	-1.2437E-03	1.4542E-04	-5.0942E-06	6.4556E-06	9.0256E-05
19	1.6293E-03	-1.2437E-03	1.6834E-04	-5.0942E-06	6.4556E-06	9.0256E-05
20	2.0354E-03	-1.2437E-03	1.9127E-04	-5.0942E-06	6.4556E-06	9.0256E-05

MINIMUM	8.1696E-04	-1.2437E-03	1.2249E-04	-5.0942E-06	6.4556E-06	9.0256E-05
Pile N.	17	17	1	1	1	1
MAXIMUM	2.1516E-03	-1.1520E-03	1.9127E-04	-5.0942E-06	6.4556E-06	9.0256E-05
Pile N.	4	1	4	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	1529.1	-200.65	23.622	-1.7865	-65.658	-510.01
2	2192.2	-191.88	27.725	-1.7865	-79.983	-493.13
3	2855.3	-199.02	33.963	-1.7865	-98.563	-507.29
4	3361.7	-254.41	49.358	-1.7865	-134.53	-610.57
5	1481.7	-185.09	21.319	-1.7865	-61.053	-485.59
6	2144.7	-176.83	25.031	-1.7865	-74.490	-469.12
7	2807.8	-184.45	30.854	-1.7865	-92.286	-484.75
8	3329.8	-248.75	47.182	-1.7865	-130.51	-607.63
9	1434.2	-189.49	21.274	-1.7865	-60.961	-500.44
10	2097.3	-181.06	24.979	-1.7865	-74.383	-483.61
11	2760.4	-188.86	30.794	-1.7865	-92.163	-499.62
12	3297.8	-254.92	47.163	-1.7865	-130.48	-626.04
13	1386.8	-194.53	21.298	-1.7865	-61.010	-516.56
14	2049.9	-185.90	25.008	-1.7865	-74.442	-499.32
15	2713.0	-193.89	30.829	-1.7865	-92.234	-515.73
16	3265.8	-261.17	47.157	-1.7865	-130.47	-644.59
17	1339.4	-220.40	23.472	-1.7865	-65.363	-573.90
18	2002.5	-210.68	27.529	-1.7865	-79.591	-555.09
19	2665.5	-218.62	33.750	-1.7865	-98.141	-570.89
20	3233.8	-279.70	49.201	-1.7865	-134.25	-685.42
MINIMUM	1339.4	-279.70	21.274	-1.7865	-134.53	-685.42
Pile N.	17	20	9	1	4	20
MAXIMUM	3361.7	-176.83	49.358	-1.7865	-60.961	-469.12
Pile N.	4	6	4	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	9.3316E-04	-1.1520E-03	1.2249E-04	-5.0942E-06	6.4556E-06	9.0256E-05
2	1.3393E-03	-1.1520E-03	1.4542E-04	-5.0942E-06	6.4556E-06	9.0256E-05
3	1.7455E-03	-1.1520E-03	1.6834E-04	-5.0942E-06	6.4556E-06	9.0256E-05
4	2.1516E-03	-1.1520E-03	1.9127E-04	-5.0942E-06	6.4556E-06	9.0256E-05
5	9.0411E-04	-1.1749E-03	1.2249E-04	-5.0942E-06	6.4556E-06	9.0256E-05
6	1.3103E-03	-1.1749E-03	1.4542E-04	-5.0942E-06	6.4556E-06	9.0256E-05
7	1.7164E-03	-1.1749E-03	1.6834E-04	-5.0942E-06	6.4556E-06	9.0256E-05
8	2.1226E-03	-1.1749E-03	1.9127E-04	-5.0942E-06	6.4556E-06	9.0256E-05
9	8.7506E-04	-1.1978E-03	1.2249E-04	-5.0942E-06	6.4556E-06	9.0256E-05
10	1.2812E-03	-1.1978E-03	1.4542E-04	-5.0942E-06	6.4556E-06	9.0256E-05
11	1.6874E-03	-1.1978E-03	1.6834E-04	-5.0942E-06	6.4556E-06	9.0256E-05
12	2.0935E-03	-1.1978E-03	1.9127E-04	-5.0942E-06	6.4556E-06	9.0256E-05
13	8.4601E-04	-1.2208E-03	1.2249E-04	-5.0942E-06	6.4556E-06	9.0256E-05
14	1.2522E-03	-1.2208E-03	1.4542E-04	-5.0942E-06	6.4556E-06	9.0256E-05
15	1.6583E-03	-1.2208E-03	1.6834E-04	-5.0942E-06	6.4556E-06	9.0256E-05
16	2.0645E-03	-1.2208E-03	1.9127E-04	-5.0942E-06	6.4556E-06	9.0256E-05
17	8.1696E-04	-1.2437E-03	1.2249E-04	-5.0942E-06	6.4556E-06	9.0256E-05
18	1.2231E-03	-1.2437E-03	1.4542E-04	-5.0942E-06	6.4556E-06	9.0256E-05
19	1.6293E-03	-1.2437E-03	1.6834E-04	-5.0942E-06	6.4556E-06	9.0256E-05
20	2.0354E-03	-1.2437E-03	1.9127E-04	-5.0942E-06	6.4556E-06	9.0256E-05
MINIMUM	8.1696E-04	-1.2437E-03	1.2249E-04	-5.0942E-06	6.4556E-06	9.0256E-05
Pile N.	17	17	1	1	1	1
MAXIMUM	2.1516E-03	-1.1520E-03	1.9127E-04	-5.0942E-06	6.4556E-06	9.0256E-05
Pile N.	4	1	4	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	1529.1	-200.65	23.622	-1.7865	-65.658	-510.01
2	2192.2	-191.88	27.725	-1.7865	-79.983	-493.13

APPALTATORE:

Consorzio

Soci



ITINERARIO NAPOLI – BARI

PROGETTAZIONE:

Mandataria

Mandanti



RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

PROGETTO ESECUTIVO

RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

COMMESSA LOTTO CODIFICA DOCUMENTO REV. FOGLIO  
IF28 01 E ZZ CL VI0403 001 B 205 di 354

3	2855.3	-199.02	33.963	-1.7865	-98.563	-507.29
4	3361.7	-254.41	49.358	-1.7865	-134.53	-610.57
5	1481.7	-185.09	21.319	-1.7865	-61.053	-485.59
6	2144.7	-176.83	25.031	-1.7865	-74.490	-469.12
7	2807.8	-184.45	30.854	-1.7865	-92.286	-484.75
8	3329.8	-248.75	47.182	-1.7865	-130.51	-607.63
9	1434.2	-189.49	21.274	-1.7865	-60.961	-500.44
10	2097.3	-181.06	24.979	-1.7865	-74.383	-483.61
11	2760.4	-188.86	30.794	-1.7865	-92.163	-499.62
12	3297.8	-254.92	47.163	-1.7865	-130.48	-626.04
13	1386.8	-194.53	21.298	-1.7865	-61.010	-516.56
14	2049.9	-185.90	25.008	-1.7865	-74.442	-499.32
15	2713.0	-193.89	30.829	-1.7865	-92.234	-515.73
16	3265.8	-261.17	47.157	-1.7865	-130.47	-644.59
17	1339.4	-220.40	23.472	-1.7865	-65.363	-573.90
18	2002.5	-210.68	27.529	-1.7865	-79.591	-555.09
19	2665.5	-218.62	33.750	-1.7865	-98.141	-570.89
20	3233.8	-279.70	49.201	-1.7865	-134.25	-685.42
MINIMUM	1339.4	-279.70	21.274	-1.7865	-134.53	-685.42
Pile N.	17	20	9	1	4	20
MAXIMUM	3361.7	-176.83	49.358	-1.7865	-60.961	-469.12
Pile N.	4	6	4	1	9	6

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

*****	*****
1	2417.2
2	2748.3
3	3175.4
4	3789.3
5	2315.5
6	2647.3
7	3078.2
8	3759.9
9	2333.1
10	2663.6
11	3095.4
12	3796.2
13	2354.6
14	2683.6
15	3116.4
16	3832.9
17	2501.2
18	2825.6
19	3256.6
20	3937.9
MINIMUM	2315.5
Pile N.	5
MAXIMUM	3937.9
Pile N.	20

\* 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	-1.1520E-03	-3.5413E-06	-248.76	-65.658	-200.66	-5.3427	-58.295	-1.3907	865.29	7.8279E+06	7.8279E+06
x(M)	0.0000	11.880	6.3000	0.0000	0.0000	9.3600	5.0400	12.240	18.000	0.0000	0.0000
2	-1.1520E-03	-4.3117E-06	-242.46	-79.983	-191.89	-6.1166	-55.477	-1.5915	1240.5	7.8279E+06	7.8279E+06
x(M)	0.0000	12.060	6.4800	0.0000	0.0000	9.5400	5.0400	12.240	18.000	0.0000	0.0000
3	-1.1520E-03	-4.9572E-06	-247.77	-98.563	-199.04	-7.3901	-57.816	-1.9364	1615.7	7.8279E+06	7.8279E+06
x(M)	0.0000	12.060	6.3000	0.0000	0.0000	9.3600	5.0400	12.240	18.000	0.0000	0.0000
4	-1.1520E-03	-5.1408E-06	-285.55	-134.53	-254.43	-10.670	-75.203	-2.7852	1902.3	7.8279E+06	7.8279E+06
x(M)	0.0000	11.160	6.1200	0.0000	0.0000	8.8200	5.0400	11.520	18.000	0.0000	0.0000
5	-1.1749E-03	-3.6746E-06	-238.43	-61.053	-185.10	-4.8036	-52.978	-1.2295	838.45	7.8279E+06	7.8279E+06
x(M)	0.0000	12.240	6.4800	0.0000	0.0000	9.5400	5.0400	12.240	18.000	0.0000	0.0000
6	-1.1749E-03	-4.4599E-06	-232.15	-74.490	-176.84	-5.4885	-50.284	-1.3841	1213.7	7.8279E+06	7.8279E+06
x(M)	0.0000	12.420	6.6600	0.0000	0.0000	9.7200	5.0400	12.240	18.000	0.0000	0.0000
7	-1.1749E-03	-5.1332E-06	-238.17	-92.286	-184.47	-6.6723	-52.816	-1.7109	1588.9	7.8279E+06	7.8279E+06
x(M)	0.0000	12.240	6.4800	0.0000	0.0000	9.7200	5.0400	12.240	18.000	0.0000	0.0000
8	-1.1749E-03	-5.2405E-06	-283.79	-130.51	-248.78	-10.208	-73.371	-2.6682	1884.3	7.8279E+06	7.8279E+06
x(M)	0.0000	11.340	6.1200	0.0000	0.0000	9.0000	5.0400	11.700	18.000	0.0000	0.0000
9	-1.1978E-03	-3.6769E-06	-242.92	-60.961	-189.50	-4.7929	-54.155	-1.2261	811.61	7.8279E+06	7.8279E+06
x(M)	0.0000	12.240	6.4800	0.0000	0.0000	9.5400	5.0400	12.240	18.000	0.0000	0.0000
10	-1.1978E-03	-4.4622E-06	-236.57	-74.383	-181.07	-5.4765	-51.402	-1.3799	1186.8	7.8279E+06	7.8279E+06
x(M)	0.0000	12.420	6.6600	0.0000	0.0000	9.7200	5.0400	12.240	18.000	0.0000	0.0000
11	-1.1978E-03	-5.1355E-06	-242.67	-92.163	-188.88	-6.6589	-53.998	-1.7062	1562.1	7.8279E+06	7.8279E+06
x(M)	0.0000	12.240	6.4800	0.0000	0.0000	9.7200	5.0400	12.240	18.000	0.0000	0.0000
12	-1.1978E-03	-5.2410E-06	-289.52	-130.48	-254.95	-10.205	-75.150	-2.6673	1866.2	7.8279E+06	7.8279E+06
x(M)	0.0000	11.340	6.1200	0.0000	0.0000	9.0000	5.0400	11.700	18.000	0.0000	0.0000
13	-1.2208E-03	-3.6751E-06	-247.90	-61.010	-194.53	-4.7990	-55.541	-1.2281	784.77	7.8279E+06	7.8279E+06
x(M)	0.0000	12.240	6.4800	0.0000	0.0000	9.5400	5.0400	12.240	18.000	0.0000	0.0000
14	-1.2208E-03	-4.4603E-06	-241.46	-74.442	-185.91	-5.4834	-52.721	-1.3824	1160.0	7.8279E+06	7.8279E+06
x(M)	0.0000	12.420	6.6600	0.0000	0.0000	9.7200	5.0400	12.240	18.000	0.0000	0.0000



<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	

12	0.8041	1.0000
13	0.4958	1.0000
14	0.4615	1.0000
15	0.4949	1.0000
16	0.8041	1.0000
17	0.5845	1.0000
18	0.5442	1.0000
19	0.5786	1.0000
20	0.8648	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN 47328.6	HOR. LOAD Y, KN -7759.78	HOR. LOAD Z, KN 641.508
MOMENT X, KN- M -1954.19	MOMENT Y, KN- M 6010.77	MOMENT Z, KN- M 82743.9

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL, M 1.49195E-03	HORIZONTAL Y, M -2.12660E-03	HORIZONTAL Z, M 1.57904E-04
ANGLE ROT. X, RAD -5.25141E-06	ANGLE ROT. Y, RAD 6.47044E-06	ANGLE ROT. Z, RAD 1.37507E-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	6.2201E-04	-2.0793E-03	1.2246E-04	-5.2514E-06	6.4704E-06	1.3751E-04
2	1.2408E-03	-2.0793E-03	1.4609E-04	-5.2514E-06	6.4704E-06	1.3751E-04
3	1.8596E-03	-2.0793E-03	1.6972E-04	-5.2514E-06	6.4704E-06	1.3751E-04
4	2.4783E-03	-2.0793E-03	1.9335E-04	-5.2514E-06	6.4704E-06	1.3751E-04
5	5.9289E-04	-2.1030E-03	1.2246E-04	-5.2514E-06	6.4704E-06	1.3751E-04
6	1.2117E-03	-2.1030E-03	1.4609E-04	-5.2514E-06	6.4704E-06	1.3751E-04
7	1.8304E-03	-2.1030E-03	1.6972E-04	-5.2514E-06	6.4704E-06	1.3751E-04
8	2.4492E-03	-2.1030E-03	1.9335E-04	-5.2514E-06	6.4704E-06	1.3751E-04
9	5.6377E-04	-2.1266E-03	1.2246E-04	-5.2514E-06	6.4704E-06	1.3751E-04
10	1.1826E-03	-2.1266E-03	1.4609E-04	-5.2514E-06	6.4704E-06	1.3751E-04
11	1.8013E-03	-2.1266E-03	1.6972E-04	-5.2514E-06	6.4704E-06	1.3751E-04
12	2.4201E-03	-2.1266E-03	1.9335E-04	-5.2514E-06	6.4704E-06	1.3751E-04
13	5.3466E-04	-2.1502E-03	1.2246E-04	-5.2514E-06	6.4704E-06	1.3751E-04
14	1.1534E-03	-2.1502E-03	1.4609E-04	-5.2514E-06	6.4704E-06	1.3751E-04
15	1.7722E-03	-2.1502E-03	1.6972E-04	-5.2514E-06	6.4704E-06	1.3751E-04
16	2.3910E-03	-2.1502E-03	1.9335E-04	-5.2514E-06	6.4704E-06	1.3751E-04
17	5.0554E-04	-2.1739E-03	1.2246E-04	-5.2514E-06	6.4704E-06	1.3751E-04
18	1.1243E-03	-2.1739E-03	1.4609E-04	-5.2514E-06	6.4704E-06	1.3751E-04
19	1.7431E-03	-2.1739E-03	1.6972E-04	-5.2514E-06	6.4704E-06	1.3751E-04
20	2.3619E-03	-2.1739E-03	1.9335E-04	-5.2514E-06	6.4704E-06	1.3751E-04
MINIMUM	5.0554E-04	-2.1739E-03	1.2246E-04	-5.2514E-06	6.4704E-06	1.3751E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	2.4783E-03	-2.0793E-03	1.9335E-04	-5.2514E-06	6.4704E-06	1.3751E-04
Pile N.	4	1	4	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	1021.1	-376.26	23.337	-1.8416	-65.113	-1005.3
2	2031.3	-360.08	27.549	-1.8416	-79.860	-973.97
3	3040.3	-373.44	33.907	-1.8416	-98.905	-1000.9
4	3721.3	-476.72	49.583	-1.8416	-135.71	-1195.8
5	973.56	-344.67	21.117	-1.8416	-60.658	-948.69
6	1983.8	-329.75	24.955	-1.8416	-74.550	-918.81
7	2994.0	-343.77	30.895	-1.8416	-92.801	-948.02
8	3689.3	-461.98	47.474	-1.8416	-131.11	-1176.3
9	926.03	-348.97	21.081	-1.8416	-60.584	-963.55
10	1936.2	-333.90	24.912	-1.8416	-74.462	-933.31
11	2946.5	-348.08	30.843	-1.8416	-92.696	-962.90
12	3657.2	-468.26	47.459	-1.8416	-131.78	-1195.2
13	878.49	-354.26	21.102	-1.8416	-60.629	-980.40
14	1888.7	-338.97	24.938	-1.8416	-74.516	-949.74
15	2898.9	-353.35	30.874	-1.8416	-92.762	-979.74
16	3625.2	-474.58	47.448	-1.8416	-131.76	-1214.1

APPALTATORE:

Consorzio

Soci



ITINERARIO NAPOLI – BARI

PROGETTAZIONE:

Mandatario

Mandanti



RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

PROGETTO ESECUTIVO

RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO
IF28	01	E ZZ CL	VI0403 001	B	208 di 354

17	830.96	-396.72	23.269	-1.8416	-64.985	-1071.5
18	1841.2	-379.64	27.463	-1.8416	-79.693	-1038.3
19	2851.4	-393.75	33.811	-1.8416	-98.720	-1066.8
20	3593.1	-502.63	49.492	-1.8416	-135.56	-1272.8
MINIMUM	830.96	-502.63	21.081	-1.8416	-135.71	-1272.8
Pile N.	17	20	9	1	4	20
MAXIMUM	3721.3	-329.75	49.583	-1.8416	-60.584	-918.81
Pile N.	4	6	4	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	6.2201E-04	-2.0793E-03	1.2246E-04	-5.2514E-06	6.4704E-06	1.3751E-04
2	1.2408E-03	-2.0793E-03	1.4609E-04	-5.2514E-06	6.4704E-06	1.3751E-04
3	1.8596E-03	-2.0793E-03	1.6972E-04	-5.2514E-06	6.4704E-06	1.3751E-04
4	2.4783E-03	-2.0793E-03	1.9335E-04	-5.2514E-06	6.4704E-06	1.3751E-04
5	5.9289E-04	-2.1030E-03	1.2246E-04	-5.2514E-06	6.4704E-06	1.3751E-04
6	1.2117E-03	-2.1030E-03	1.4609E-04	-5.2514E-06	6.4704E-06	1.3751E-04
7	1.8304E-03	-2.1030E-03	1.6972E-04	-5.2514E-06	6.4704E-06	1.3751E-04
8	2.4492E-03	-2.1030E-03	1.9335E-04	-5.2514E-06	6.4704E-06	1.3751E-04
9	5.6377E-04	-2.1266E-03	1.2246E-04	-5.2514E-06	6.4704E-06	1.3751E-04
10	1.1826E-03	-2.1266E-03	1.4609E-04	-5.2514E-06	6.4704E-06	1.3751E-04
11	1.8013E-03	-2.1266E-03	1.6972E-04	-5.2514E-06	6.4704E-06	1.3751E-04
12	2.4201E-03	-2.1266E-03	1.9335E-04	-5.2514E-06	6.4704E-06	1.3751E-04
13	5.3466E-04	-2.1502E-03	1.2246E-04	-5.2514E-06	6.4704E-06	1.3751E-04
14	1.1534E-03	-2.1502E-03	1.4609E-04	-5.2514E-06	6.4704E-06	1.3751E-04
15	1.7722E-03	-2.1502E-03	1.6972E-04	-5.2514E-06	6.4704E-06	1.3751E-04
16	2.3910E-03	-2.1502E-03	1.9335E-04	-5.2514E-06	6.4704E-06	1.3751E-04
17	5.0554E-04	-2.1739E-03	1.2246E-04	-5.2514E-06	6.4704E-06	1.3751E-04
18	1.1243E-03	-2.1739E-03	1.4609E-04	-5.2514E-06	6.4704E-06	1.3751E-04
19	1.7431E-03	-2.1739E-03	1.6972E-04	-5.2514E-06	6.4704E-06	1.3751E-04
20	2.3619E-03	-2.1739E-03	1.9335E-04	-5.2514E-06	6.4704E-06	1.3751E-04
MINIMUM	5.0554E-04	-2.1739E-03	1.2246E-04	-5.2514E-06	6.4704E-06	1.3751E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	2.4783E-03	-2.0793E-03	1.9335E-04	-5.2514E-06	6.4704E-06	1.3751E-04
Pile N.	4	1	4	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	1021.1	-376.26	23.337	-1.8416	-65.113	-1005.3
2	2031.3	-360.08	27.549	-1.8416	-79.860	-973.97
3	3040.3	-373.44	33.907	-1.8416	-98.905	-1000.9
4	3721.3	-476.72	49.583	-1.8416	-135.71	-1195.8
5	973.56	-344.67	21.117	-1.8416	-60.658	-948.69
6	1983.8	-329.75	24.955	-1.8416	-74.550	-918.81
7	2994.0	-343.77	30.895	-1.8416	-92.801	-948.02
8	3689.3	-461.98	47.474	-1.8416	-131.81	-1176.3
9	926.03	-348.97	21.081	-1.8416	-60.584	-963.55
10	1936.2	-333.90	24.912	-1.8416	-74.462	-933.31
11	2946.5	-348.08	30.843	-1.8416	-92.696	-962.90
12	3657.2	-468.26	47.459	-1.8416	-131.78	-1195.2
13	878.49	-354.26	21.102	-1.8416	-60.629	-980.40
14	1888.7	-338.97	24.938	-1.8416	-74.516	-949.74
15	2898.9	-353.35	30.874	-1.8416	-92.762	-979.74
16	3625.2	-474.58	47.448	-1.8416	-131.76	-1214.1
17	830.96	-396.72	23.269	-1.8416	-64.985	-1071.5
18	1841.2	-379.64	27.463	-1.8416	-79.693	-1038.3
19	2851.4	-393.75	33.811	-1.8416	-98.720	-1066.8
20	3593.1	-502.63	49.492	-1.8416	-135.56	-1272.8
MINIMUM	830.96	-502.63	21.081	-1.8416	-135.71	-1272.8
Pile N.	17	20	9	1	4	20
MAXIMUM	3721.3	-329.75	49.583	-1.8416	-60.584	-918.81
Pile N.	4	6	4	1	9	6

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

PILE GROUP	STRESS, KN/ M**2
*****	*****
1	3618.3
2	4098.8
3	4756.0
4	5737.9
5	3420.0
6	3904.7
7	4569.1
8	5660.1
9	3437.8
10	3921.4
11	4586.9
12	5698.5



APPALTATORE:

Consorzio

Soci



ITINERARIO NAPOLI – BARI

PROGETTAZIONE:

Mandatario

Mandanti



RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

PROGETTO ESECUTIVO

RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

COMMESSA LOTTO CODIFICA DOCUMENTO REV. FOGLIO  
IF28 01 E ZZ CL VI0403 001 B 209 di 354

Table with 2 columns: depth (13-20) and displacement values (3461.7 to 5896.4)

Table with 2 columns: MINIMUM/MAXIMUM and Pile N. (3420.0, 5, 5896.4, 20)

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

Main data table with 13 columns: PILE, DISPL., MOMENT, SHEAR, SOIL REACT, TOTAL STRESS, FLEX. RIG., etc. for 20 pile depths.

\* MAXIMUM VALUES AND LOCATIONS \*

Summary table with 13 columns: PILE, DISPL., MOMENT, SHEAR, SOIL REACT, TOTAL STRESS, FLEX. RIG., etc. showing maximum values and locations.

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>				
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>					
<b>COMMESSA</b> <b>IF28</b>	<b>LOTTO</b> <b>01</b>	<b>CODIFICA</b> <b>E ZZ CL</b>	<b>DOCUMENTO</b> <b>VI0403 001</b>	<b>REV.</b> <b>B</b>	<b>FOGLIO</b> <b>210 di 354</b>

9	6.3046E-05	1.2246E-04	963.55	25.142	82.322	21.081	20.999	5.9683	3437.8	7.8279E+06	7.8279E+06
x( M)	12.240	0.0000	0.0000	6.6600	9.5400	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
10	6.4010E-05	1.4609E-04	933.31	29.405	78.784	24.914	19.847	6.9490	3921.4	7.8279E+06	7.8279E+06
x( M)	12.240	0.0000	0.0000	6.8400	9.5400	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
11	6.3223E-05	1.6972E-04	962.90	35.245	82.417	30.847	21.020	8.6435	4586.9	7.8279E+06	7.8279E+06
x( M)	12.240	0.0000	0.0000	6.8400	9.5400	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
12	5.6441E-05	1.9335E-04	1195.2	48.211	110.51	47.464	28.420	13.878	5698.5	7.8279E+06	7.8279E+06
x( M)	11.160	0.0000	0.0000	6.3000	8.8200	0.0000	11.700	5.0400	0.0000	0.0000	0.0000
13	6.3757E-05	1.2246E-04	980.40	25.161	83.383	21.103	21.280	5.9776	3461.7	7.8279E+06	7.8279E+06
x( M)	12.240	0.0000	0.0000	6.6600	9.5400	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
14	6.4731E-05	1.4609E-04	949.74	29.427	79.795	24.939	20.112	6.9600	3944.0	7.8279E+06	7.8279E+06
x( M)	12.240	0.0000	0.0000	6.8400	9.5400	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
15	6.3935E-05	1.6972E-04	979.74	35.272	83.479	30.877	21.302	8.6570	4610.6	7.8279E+06	7.8279E+06
x( M)	12.240	0.0000	0.0000	6.8400	9.5400	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
16	5.7103E-05	1.9335E-04	1214.1	48.210	111.79	47.453	28.766	13.879	5737.3	7.8279E+06	7.8279E+06
x( M)	11.160	0.0000	0.0000	6.3000	8.8200	0.0000	11.700	5.0400	0.0000	0.0000	0.0000
17	6.2260E-05	1.2246E-04	1071.5	26.737	93.289	23.270	24.158	6.7062	3710.0	7.8279E+06	7.8279E+06
x( M)	11.880	0.0000	0.0000	6.6600	9.3600	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
18	6.3320E-05	1.4609E-04	1038.3	31.286	89.434	27.465	23.072	7.8174	4184.7	7.8279E+06	7.8279E+06
x( M)	12.060	0.0000	0.0000	6.6600	9.3600	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
19	6.2553E-05	1.6972E-04	1066.8	37.380	92.923	33.814	24.052	9.6532	4847.0	7.8279E+06	7.8279E+06
x( M)	11.880	0.0000	0.0000	6.6600	9.3600	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
20	5.6736E-05	1.9335E-04	1272.8	49.517	117.86	49.498	30.348	14.543	5896.4	7.8279E+06	7.8279E+06
x( M)	10.980	0.0000	0.0000	6.3000	8.8200	0.0000	11.520	5.0400	0.0000	0.0000	0.0000
Max.	6.4731E-05	1.9335E-04	1272.8	49.549	117.86	49.588	30.348	14.552	5896.4	7.8279E+06	7.8279E+06
Pile N.	14	4	20	4	20	4	20	4	20	1	1

LOAD CASE : 3  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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	0.5864	1.0000
2	0.5462	1.0000
3	0.5805	1.0000
4	0.8661	1.0000
5	0.4960	1.0000
6	0.4617	1.0000
7	0.4951	1.0000
8	0.8043	1.0000
9	0.4947	1.0000
10	0.4606	1.0000
11	0.4939	1.0000
12	0.8041	1.0000
13	0.4958	1.0000
14	0.4615	1.0000
15	0.4949	1.0000
16	0.8041	1.0000
17	0.5845	1.0000
18	0.5442	1.0000
19	0.5787	1.0000
20	0.8648	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
45535.4	-7032.73	551.294
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-1501.35	5505.41	65864.9

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
1.41529E-03	-1.87577E-03	1.36538E-04
ANGLE ROT. X, RAD	ANGLE ROT. Y, RAD	ANGLE ROT. Z, RAD
-3.93126E-06	5.82612E-06	1.09397E-04

THE GLOBAL STRUCTURAL COORDINATE SYSTEM

<b>APPALTATORE:</b> Consorzio  Soci  		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria  Mandanti  							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>							<b>COMMESSA</b> <b>IF28</b>

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	7.2929E-04	-1.8404E-03	1.1000E-04	-3.9313E-06	5.8261E-06	1.0940E-04
2	1.2216E-03	-1.8404E-03	1.2769E-04	-3.9313E-06	5.8261E-06	1.0940E-04
3	1.7139E-03	-1.8404E-03	1.4538E-04	-3.9313E-06	5.8261E-06	1.0940E-04
4	2.2062E-03	-1.8404E-03	1.6307E-04	-3.9313E-06	5.8261E-06	1.0940E-04
5	7.0307E-04	-1.8581E-03	1.1000E-04	-3.9313E-06	5.8261E-06	1.0940E-04
6	1.1954E-03	-1.8581E-03	1.2769E-04	-3.9313E-06	5.8261E-06	1.0940E-04
7	1.6876E-03	-1.8581E-03	1.4538E-04	-3.9313E-06	5.8261E-06	1.0940E-04
8	2.1799E-03	-1.8581E-03	1.6307E-04	-3.9313E-06	5.8261E-06	1.0940E-04
9	6.7685E-04	-1.8758E-03	1.1000E-04	-3.9313E-06	5.8261E-06	1.0940E-04
10	1.1691E-03	-1.8758E-03	1.2769E-04	-3.9313E-06	5.8261E-06	1.0940E-04
11	1.6614E-03	-1.8758E-03	1.4538E-04	-3.9313E-06	5.8261E-06	1.0940E-04
12	2.1537E-03	-1.8758E-03	1.6307E-04	-3.9313E-06	5.8261E-06	1.0940E-04
13	6.5064E-04	-1.8935E-03	1.1000E-04	-3.9313E-06	5.8261E-06	1.0940E-04
14	1.1429E-03	-1.8935E-03	1.2769E-04	-3.9313E-06	5.8261E-06	1.0940E-04
15	1.6352E-03	-1.8935E-03	1.4538E-04	-3.9313E-06	5.8261E-06	1.0940E-04
16	2.1275E-03	-1.8935E-03	1.6307E-04	-3.9313E-06	5.8261E-06	1.0940E-04
17	6.2442E-04	-1.9111E-03	1.1000E-04	-3.9313E-06	5.8261E-06	1.0940E-04
18	1.1167E-03	-1.9111E-03	1.2769E-04	-3.9313E-06	5.8261E-06	1.0940E-04
19	1.6090E-03	-1.9111E-03	1.4538E-04	-3.9313E-06	5.8261E-06	1.0940E-04
20	2.1013E-03	-1.9111E-03	1.6307E-04	-3.9313E-06	5.8261E-06	1.0940E-04
MINIMUM	6.2442E-04	-1.9111E-03	1.1000E-04	-3.9313E-06	5.8261E-06	1.0940E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	2.2062E-03	-1.8404E-03	1.6307E-04	-3.9313E-06	5.8261E-06	1.0940E-04
Pile N.	4	1	4	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	1196.3	-342.58	20.992	-1.3787	-58.503	-935.49
2	2000.0	-328.05	24.007	-1.3787	-69.263	-907.13
3	2803.7	-340.14	28.901	-1.3787	-83.781	-931.47
4	3421.7	-433.16	41.602	-1.3787	-113.15	-1107.4
5	1153.4	-313.40	18.997	-1.3787	-54.502	-881.87
6	1957.2	-300.03	21.744	-1.3787	-64.639	-854.89
7	2760.9	-312.70	26.330	-1.3787	-78.580	-881.24
8	3392.9	-418.96	39.831	-1.3787	-109.87	-1087.0
9	1110.6	-316.56	18.966	-1.3787	-54.438	-892.87
10	1914.4	-303.08	21.709	-1.3787	-64.566	-865.62
11	2718.1	-315.87	26.288	-1.3787	-78.495	-892.26
12	3364.0	-423.69	39.821	-1.3787	-109.86	-1101.1
13	1067.8	-320.61	18.987	-1.3787	-54.481	-905.66
14	1871.5	-306.97	21.733	-1.3787	-64.616	-878.09
15	2675.3	-319.91	26.317	-1.3787	-78.554	-905.04
16	3335.2	-428.45	39.815	-1.3787	-109.85	-1115.4
17	1025.0	-357.90	20.940	-1.3787	-58.401	-984.99
18	1828.7	-342.69	23.942	-1.3787	-69.135	-955.22
19	2632.5	-355.36	28.830	-1.3787	-83.643	-980.78
20	3306.3	-452.63	41.541	-1.3787	-113.04	-1165.1
MINIMUM	1025.0	-452.63	18.966	-1.3787	-113.15	-1165.1
Pile N.	17	20	9	1	4	20
MAXIMUM	3421.7	-300.03	41.602	-1.3787	-54.438	-854.89
Pile N.	4	6	4	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	7.2929E-04	-1.8404E-03	1.1000E-04	-3.9313E-06	5.8261E-06	1.0940E-04
2	1.2216E-03	-1.8404E-03	1.2769E-04	-3.9313E-06	5.8261E-06	1.0940E-04
3	1.7139E-03	-1.8404E-03	1.4538E-04	-3.9313E-06	5.8261E-06	1.0940E-04
4	2.2062E-03	-1.8404E-03	1.6307E-04	-3.9313E-06	5.8261E-06	1.0940E-04
5	7.0307E-04	-1.8581E-03	1.1000E-04	-3.9313E-06	5.8261E-06	1.0940E-04
6	1.1954E-03	-1.8581E-03	1.2769E-04	-3.9313E-06	5.8261E-06	1.0940E-04
7	1.6876E-03	-1.8581E-03	1.4538E-04	-3.9313E-06	5.8261E-06	1.0940E-04
8	2.1799E-03	-1.8581E-03	1.6307E-04	-3.9313E-06	5.8261E-06	1.0940E-04
9	6.7685E-04	-1.8758E-03	1.1000E-04	-3.9313E-06	5.8261E-06	1.0940E-04
10	1.1691E-03	-1.8758E-03	1.2769E-04	-3.9313E-06	5.8261E-06	1.0940E-04
11	1.6614E-03	-1.8758E-03	1.4538E-04	-3.9313E-06	5.8261E-06	1.0940E-04
12	2.1537E-03	-1.8758E-03	1.6307E-04	-3.9313E-06	5.8261E-06	1.0940E-04
13	6.5064E-04	-1.8935E-03	1.1000E-04	-3.9313E-06	5.8261E-06	1.0940E-04
14	1.1429E-03	-1.8935E-03	1.2769E-04	-3.9313E-06	5.8261E-06	1.0940E-04
15	1.6352E-03	-1.8935E-03	1.4538E-04	-3.9313E-06	5.8261E-06	1.0940E-04
16	2.1275E-03	-1.8935E-03	1.6307E-04	-3.9313E-06	5.8261E-06	1.0940E-04
17	6.2442E-04	-1.9111E-03	1.1000E-04	-3.9313E-06	5.8261E-06	1.0940E-04
18	1.1167E-03	-1.9111E-03	1.2769E-04	-3.9313E-06	5.8261E-06	1.0940E-04
19	1.6090E-03	-1.9111E-03	1.4538E-04	-3.9313E-06	5.8261E-06	1.0940E-04
20	2.1013E-03	-1.9111E-03	1.6307E-04	-3.9313E-06	5.8261E-06	1.0940E-04

<b>APPALTATORE:</b> Consorzio  Soci  		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria  Mandanti  		
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>		

MINIMUM	6.2442E-04	-1.9111E-03	1.1000E-04	-3.9313E-06	5.8261E-06	1.0940E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	2.2062E-03	-1.8404E-03	1.6307E-04	-3.9313E-06	5.8261E-06	1.0940E-04
Pile N.	4	1	4	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	1196.3	-342.58	20.992	-1.3787	-58.503	-935.49
2	2000.0	-328.05	24.007	-1.3787	-69.263	-907.13
3	2803.7	-340.14	28.901	-1.3787	-83.781	-931.47
4	3421.7	-433.16	41.602	-1.3787	-113.15	-1107.4
5	1153.4	-313.40	18.997	-1.3787	-54.502	-881.87
6	1957.2	-300.03	21.744	-1.3787	-64.639	-854.89
7	2760.9	-312.70	26.330	-1.3787	-78.580	-881.24
8	3392.9	-418.96	39.831	-1.3787	-109.87	-1087.0
9	1110.6	-316.56	18.966	-1.3787	-54.438	-892.87
10	1914.4	-303.08	21.709	-1.3787	-64.566	-865.62
11	2718.1	-315.87	26.288	-1.3787	-78.495	-892.26
12	3364.0	-423.69	39.821	-1.3787	-109.86	-1101.1
13	1067.8	-320.61	18.987	-1.3787	-54.481	-905.66
14	1871.5	-306.97	21.733	-1.3787	-64.616	-878.09
15	2675.3	-319.91	26.317	-1.3787	-78.554	-905.04
16	3335.2	-428.45	39.815	-1.3787	-109.85	-1115.4
17	1025.0	-357.90	20.940	-1.3787	-58.401	-984.99
18	1828.7	-342.69	23.942	-1.3787	-69.135	-955.22
19	2632.5	-355.36	28.830	-1.3787	-83.643	-980.78
20	3306.3	-452.63	41.541	-1.3787	-113.04	-1165.1
MINIMUM	1025.0	-452.63	18.966	-1.3787	-113.15	-1165.1
Pile N.	17	20	9	1	4	20
MAXIMUM	3421.7	-300.03	41.602	-1.3787	-54.438	-854.89
Pile N.	4	6	4	1	9	6

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







1	3505.8
2	3877.5
3	4409.1
4	5295.9
5	3319.3
6	3695.0
7	4232.5
8	5217.2
9	3328.2
10	3703.1
11	4241.4
12	5243.4
13	3342.5
14	3716.4
15	4255.6
16	5269.8
17	3558.0
18	3925.3
19	4460.5
20	5404.0
MINIMUM	3319.3
Pile N.	5
MAXIMUM	5404.0
Pile N.	20

\* 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	-1.8404E-03	-3.1825E-06	-400.76	-58.503	-342.59	-4.7737	-98.828	-1.2426	676.94	7.8279E+06	7.8279E+06
x( M)	0.0000	11.880	6.4800	0.0000	0.0000	9.3600	5.0400	12.240	18.000	0.0000	0.0000
2	-1.8404E-03	-3.7853E-06	-390.36	-69.263	-328.07	-5.3405	-94.066	-1.3882	1131.7	7.8279E+06	7.8279E+06
x( M)	0.0000	12.060	6.6600	0.0000	0.0000	9.5400	5.0400	12.240	18.000	0.0000	0.0000
3	-1.8404E-03	-4.2779E-06	-399.41	-83.781	-340.17	-6.3489	-98.115	-1.6625	1586.5	7.8279E+06	7.8279E+06
x( M)	0.0000	12.060	6.4800	0.0000	0.0000	9.3600	5.0400	12.240	18.000	0.0000	0.0000
4	-1.8404E-03	-4.3736E-06	-461.88	-113.15	-433.20	-9.0786	-127.96	-2.3687	1936.3	7.8279E+06	7.8279E+06
x( M)	0.0000	11.160	6.1200	0.0000	0.0000	8.8200	5.0400	11.520	18.000	0.0000	0.0000
5	-1.8581E-03	-3.2983E-06	-380.50	-54.502	-313.41	-4.3037	-88.934	-1.1013	652.72	7.8279E+06	7.8279E+06
x( M)	0.0000	12.240	6.6600	0.0000	0.0000	9.5400	5.0400	12.240	18.000	0.0000	0.0000
6	-1.8581E-03	-3.9103E-06	-370.41	-64.639	-300.05	-4.8093	-84.501	-1.2125	1107.5	7.8279E+06	7.8279E+06
x( M)	0.0000	12.420	6.8400	0.0000	0.0000	9.7200	5.0400	12.240	18.000	0.0000	0.0000
7	-1.8581E-03	-4.4244E-06	-380.40	-78.580	-312.72	-5.7513	-88.794	-1.4747	1562.3	7.8279E+06	7.8279E+06
x( M)	0.0000	12.240	6.6600	0.0000	0.0000	9.7200	5.0400	12.240	18.000	0.0000	0.0000
8	-1.8581E-03	-4.4550E-06	-454.26	-109.87	-419.01	-8.6997	-123.41	-2.2728	1920.0	7.8279E+06	7.8279E+06
x( M)	0.0000	11.340	6.3000	0.0000	0.0000	9.0000	5.0400	11.700	18.000	0.0000	0.0000



<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>				
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>					
<b>COMMESSA</b> <b>IF28</b>	<b>LOTTO</b> <b>01</b>	<b>CODIFICA</b> <b>E ZZ CL</b>	<b>DOCUMENTO</b> <b>VI0403 001</b>	<b>REV.</b> <b>B</b>	<b>FOGLIO</b> <b>214 di 354</b>

1	0.5887	1.0000
2	0.5483	1.0000
3	0.5823	1.0000
4	0.8661	1.0000
5	0.4966	1.0000
6	0.4620	1.0000
7	0.4951	1.0000
8	0.8030	1.0000
9	0.4951	1.0000
10	0.4606	1.0000
11	0.4937	1.0000
12	0.8027	1.0000
13	0.4961	1.0000
14	0.4615	1.0000
15	0.4947	1.0000
16	0.8027	1.0000
17	0.5845	1.0000
18	0.5439	1.0000
19	0.5781	1.0000
20	0.8632	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN 48460.4	HOR. LOAD Y, KN -7435.37	HOR. LOAD Z, KN 877.148
MOMENT X, KN- M -2574.63	MOMENT Y, KN- M 10542.0	MOMENT Z, KN- M 76048.5

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL, M 1.52489E-03	HORIZONTAL Y, M -2.02384E-03	HORIZONTAL Z, M 2.22418E-04
ANGLE ROT. X, RAD -6.90942E-06	ANGLE ROT. Y, RAD 1.09212E-05	ANGLE ROT. Z, RAD 1.27849E-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	7.6020E-04	-1.9617E-03	1.7578E-04	-6.9094E-06	1.0921E-05	1.2785E-04
2	1.3355E-03	-1.9617E-03	2.0687E-04	-6.9094E-06	1.0921E-05	1.2785E-04
3	1.9108E-03	-1.9617E-03	2.3796E-04	-6.9094E-06	1.0921E-05	1.2785E-04
4	2.4862E-03	-1.9617E-03	2.6906E-04	-6.9094E-06	1.0921E-05	1.2785E-04
5	7.1106E-04	-1.9928E-03	1.7578E-04	-6.9094E-06	1.0921E-05	1.2785E-04
6	1.2864E-03	-1.9928E-03	2.0687E-04	-6.9094E-06	1.0921E-05	1.2785E-04
7	1.8617E-03	-1.9928E-03	2.3796E-04	-6.9094E-06	1.0921E-05	1.2785E-04
8	2.4370E-03	-1.9928E-03	2.6906E-04	-6.9094E-06	1.0921E-05	1.2785E-04
9	6.6191E-04	-2.0238E-03	1.7578E-04	-6.9094E-06	1.0921E-05	1.2785E-04
10	1.2372E-03	-2.0238E-03	2.0687E-04	-6.9094E-06	1.0921E-05	1.2785E-04
11	1.8126E-03	-2.0238E-03	2.3796E-04	-6.9094E-06	1.0921E-05	1.2785E-04
12	2.3879E-03	-2.0238E-03	2.6906E-04	-6.9094E-06	1.0921E-05	1.2785E-04
13	6.1277E-04	-2.0549E-03	1.7578E-04	-6.9094E-06	1.0921E-05	1.2785E-04
14	1.1881E-03	-2.0549E-03	2.0687E-04	-6.9094E-06	1.0921E-05	1.2785E-04
15	1.7634E-03	-2.0549E-03	2.3796E-04	-6.9094E-06	1.0921E-05	1.2785E-04
16	2.3387E-03	-2.0549E-03	2.6906E-04	-6.9094E-06	1.0921E-05	1.2785E-04
17	5.6362E-04	-2.0860E-03	1.7578E-04	-6.9094E-06	1.0921E-05	1.2785E-04
18	1.1389E-03	-2.0860E-03	2.0687E-04	-6.9094E-06	1.0921E-05	1.2785E-04
19	1.7143E-03	-2.0860E-03	2.3796E-04	-6.9094E-06	1.0921E-05	1.2785E-04
20	2.2896E-03	-2.0860E-03	2.6906E-04	-6.9094E-06	1.0921E-05	1.2785E-04
MINIMUM	5.6362E-04	-2.0860E-03	1.7578E-04	-6.9094E-06	1.0921E-05	1.2785E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	2.4862E-03	-1.9617E-03	2.6906E-04	-6.9094E-06	1.0921E-05	1.2785E-04
Pile N.	4	1	4	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	1246.7	-357.49	32.422	-2.4231	-87.739	-957.47
2	2186.0	-342.14	37.892	-2.4231	-107.02	-927.71
3	3096.7	-354.66	46.335	-2.4231	-132.21	-952.90
4	3729.9	-451.77	67.468	-2.4231	-181.50	-1136.0

## APPALTATORE:

Consorzio



Soci



## ITINERARIO NAPOLI – BARI

RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

## PROGETTAZIONE:

Mandatario



Mandanti



## PROGETTO ESECUTIVO

## RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO
IF28	01	E ZZ CL	VI0403 001	B	215 di 354

5	1166.5	-328.79	29.246	-2.4231	-81.404	-908.61
6	2105.7	-314.48	34.209	-2.4231	-99.523	-879.87
7	3042.6	-327.73	42.096	-2.4231	-123.67	-907.47
8	3675.8	-439.75	64.509	-2.4231	-176.04	-1123.9
9	1086.2	-334.58	29.184	-2.4231	-81.279	-928.39
10	2025.5	-320.04	34.139	-2.4231	-99.378	-899.17
11	2964.8	-333.52	42.014	-2.4231	-123.50	-927.29
12	3621.7	-448.00	64.477	-2.4231	-175.98	-1148.7
13	1006.0	-341.39	29.213	-2.4231	-81.338	-950.26
14	1945.3	-326.58	34.172	-2.4231	-99.448	-920.48
15	2884.5	-340.32	42.054	-2.4231	-123.58	-949.13
16	3567.6	-456.33	64.459	-2.4231	-175.95	-1173.6
17	925.78	-383.94	32.246	-2.4231	-87.398	-1043.5
18	1865.0	-367.35	37.668	-2.4231	-106.57	-1011.2
19	2804.3	-380.90	46.087	-2.4231	-131.73	-1038.6
20	3513.6	-485.60	67.259	-2.4231	-181.14	-1236.9
MINIMUM	925.78	-485.60	29.184	-2.4231	-181.50	-1236.9
Pile N.	17	20	9	1	4	20
MAXIMUM	3729.9	-314.48	67.468	-2.4231	-81.279	-879.87
Pile N.	4	6	4	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	7.6020E-04	-1.9617E-03	1.7578E-04	-6.9094E-06	1.0921E-05	1.2785E-04
2	1.3355E-03	-1.9617E-03	2.0687E-04	-6.9094E-06	1.0921E-05	1.2785E-04
3	1.9108E-03	-1.9617E-03	2.3796E-04	-6.9094E-06	1.0921E-05	1.2785E-04
4	2.4862E-03	-1.9617E-03	2.6906E-04	-6.9094E-06	1.0921E-05	1.2785E-04
5	7.1106E-04	-1.9928E-03	1.7578E-04	-6.9094E-06	1.0921E-05	1.2785E-04
6	1.2864E-03	-1.9928E-03	2.0687E-04	-6.9094E-06	1.0921E-05	1.2785E-04
7	1.8617E-03	-1.9928E-03	2.3796E-04	-6.9094E-06	1.0921E-05	1.2785E-04
8	2.4370E-03	-1.9928E-03	2.6906E-04	-6.9094E-06	1.0921E-05	1.2785E-04
9	6.6191E-04	-2.0238E-03	1.7578E-04	-6.9094E-06	1.0921E-05	1.2785E-04
10	1.2372E-03	-2.0238E-03	2.0687E-04	-6.9094E-06	1.0921E-05	1.2785E-04
11	1.8126E-03	-2.0238E-03	2.3796E-04	-6.9094E-06	1.0921E-05	1.2785E-04
12	2.3879E-03	-2.0238E-03	2.6906E-04	-6.9094E-06	1.0921E-05	1.2785E-04
13	6.1277E-04	-2.0549E-03	1.7578E-04	-6.9094E-06	1.0921E-05	1.2785E-04
14	1.1881E-03	-2.0549E-03	2.0687E-04	-6.9094E-06	1.0921E-05	1.2785E-04
15	1.7634E-03	-2.0549E-03	2.3796E-04	-6.9094E-06	1.0921E-05	1.2785E-04
16	2.3387E-03	-2.0549E-03	2.6906E-04	-6.9094E-06	1.0921E-05	1.2785E-04
17	5.6362E-04	-2.0860E-03	1.7578E-04	-6.9094E-06	1.0921E-05	1.2785E-04
18	1.1389E-03	-2.0860E-03	2.0687E-04	-6.9094E-06	1.0921E-05	1.2785E-04
19	1.7143E-03	-2.0860E-03	2.3796E-04	-6.9094E-06	1.0921E-05	1.2785E-04
20	2.2896E-03	-2.0860E-03	2.6906E-04	-6.9094E-06	1.0921E-05	1.2785E-04
MINIMUM	5.6362E-04	-2.0860E-03	1.7578E-04	-6.9094E-06	1.0921E-05	1.2785E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	2.4862E-03	-1.9617E-03	2.6906E-04	-6.9094E-06	1.0921E-05	1.2785E-04
Pile N.	4	1	4	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	1246.7	-357.49	32.422	-2.4231	-87.739	-957.47
2	2186.0	-342.14	37.892	-2.4231	-107.02	-927.71
3	3096.7	-354.66	46.335	-2.4231	-132.21	-952.90
4	3729.9	-451.77	67.468	-2.4231	-181.50	-1136.0
5	1166.5	-328.79	29.246	-2.4231	-81.404	-908.61
6	2105.7	-314.48	34.209	-2.4231	-99.523	-879.87
7	3042.6	-327.73	42.096	-2.4231	-123.67	-907.47
8	3675.8	-439.75	64.509	-2.4231	-176.04	-1123.9
9	1086.2	-334.58	29.184	-2.4231	-81.279	-928.39
10	2025.5	-320.04	34.139	-2.4231	-99.378	-899.17
11	2964.8	-333.52	42.014	-2.4231	-123.50	-927.29
12	3621.7	-448.00	64.477	-2.4231	-175.98	-1148.7
13	1006.0	-341.39	29.213	-2.4231	-81.338	-950.26
14	1945.3	-326.58	34.172	-2.4231	-99.448	-920.48
15	2884.5	-340.32	42.054	-2.4231	-123.58	-949.13
16	3567.6	-456.33	64.459	-2.4231	-175.95	-1173.6
17	925.78	-383.94	32.246	-2.4231	-87.398	-1043.5
18	1865.0	-367.35	37.668	-2.4231	-106.57	-1011.2
19	2804.3	-380.90	46.087	-2.4231	-131.73	-1038.6
20	3513.6	-485.60	67.259	-2.4231	-181.14	-1236.9
MINIMUM	925.78	-485.60	29.184	-2.4231	-181.50	-1236.9
Pile N.	17	20	9	1	4	20
MAXIMUM	3729.9	-314.48	67.468	-2.4231	-81.279	-879.87
Pile N.	4	6	4	1	9	6

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

APPALTATORE:

Consorzio

Soci



ITINERARIO NAPOLI – BARI

PROGETTAZIONE:

Mandataria

Mandanti



RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

PROGETTO ESECUTIVO

RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

COMMESSA  
IF28

LOTTO  
01

CODIFICA  
E ZZ CL

DOCUMENTO  
VI0403 001

REV.  
B

FOGLIO  
216 di  
354

1	3607.3
2	4055.4
3	4655.8
4	5582.8
5	3413.3
6	3864.0
7	4485.9
8	5513.3
9	3427.3
10	3876.5
11	4501.0
12	5556.6
13	3447.7
14	3895.0
15	4521.0
16	5600.5
17	3684.4
18	4124.2
19	4746.6
20	5761.0

MINIMUM	3413.3
Pile N.	5
MAXIMUM	5761.0
Pile N.	20

\* 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	-1.9617E-03	-5.0338E-06	-426.21	-87.739	-357.51	-7.5862	-103.71	-1.9659	705.50	7.8279E+06	7.8279E+06
x( M)	0.0000	11.880	6.4800	0.0000	0.0000	9.3600	5.0400	12.240	18.000	0.0000	0.0000
2	-1.9617E-03	-6.0831E-06	-415.20	-107.02	-342.17	-8.6205	-98.703	-2.2363	1237.0	7.8279E+06	7.8279E+06
x( M)	0.0000	12.060	6.4800	0.0000	0.0000	9.3600	5.0400	12.240	18.000	0.0000	0.0000
3	-1.9617E-03	-6.9583E-06	-424.70	-132.21	-354.69	-10.364	-102.90	-2.7066	1752.4	7.8279E+06	7.8279E+06
x( M)	0.0000	11.880	6.4800	0.0000	0.0000	9.3600	5.0400	12.240	18.000	0.0000	0.0000
4	-1.9617E-03	-7.1811E-06	-490.40	-181.50	-451.82	-14.915	-133.96	-3.8827	2110.7	7.8279E+06	7.8279E+06
x( M)	0.0000	11.160	6.1200	0.0000	0.0000	8.8200	5.0400	11.520	18.000	0.0000	0.0000
5	-1.9928E-03	-5.2216E-06	-406.87	-81.404	-328.81	-6.8353	-93.858	-1.7457	660.09	7.8279E+06	7.8279E+06
x( M)	0.0000	12.240	6.6600	0.0000	0.0000	9.5400	5.0400	12.240	18.000	0.0000	0.0000
6	-1.9928E-03	-6.2908E-06	-396.14	-99.523	-314.50	-7.7498	-89.126	-1.9544	1191.6	7.8279E+06	7.8279E+06
x( M)	0.0000	12.420	6.6600	0.0000	0.0000	9.7200	5.0400	12.240	18.000	0.0000	0.0000
7	-1.9928E-03	-7.2032E-06	-406.62	-123.67	-327.76	-9.3674	-93.625	-2.4009	1721.8	7.8279E+06	7.8279E+06
x( M)	0.0000	12.240	6.6600	0.0000	0.0000	9.5400	5.0400	12.240	18.000	0.0000	0.0000
8	-1.9928E-03	-7.3163E-06	-484.92	-176.04	-439.80	-14.274	-130.04	-3.7214	2080.1	7.8279E+06	7.8279E+06
x( M)	0.0000	11.340	6.1200	0.0000	0.0000	9.0000	5.0400	11.700	18.000	0.0000	0.0000
9	-2.0238E-03	-5.2246E-06	-412.99	-81.279	-334.59	-6.8218	-95.434	-1.7414	614.69	7.8279E+06	7.8279E+06
x( M)	0.0000	12.240	6.6600	0.0000	0.0000	9.5400	5.0400	12.240	18.000	0.0000	0.0000
10	-2.0238E-03	-6.2938E-06	-402.06	-99.378	-320.06	-7.7345	-90.624	-1.9491	1146.2	7.8279E+06	7.8279E+06
x( M)	0.0000	12.420	6.6600	0.0000	0.0000	9.7200	5.0400	12.240	18.000	0.0000	0.0000
11	-2.0238E-03	-7.2062E-06	-412.76	-123.50	-333.56	-9.3488	-95.208	-2.3949	1677.7	7.8279E+06	7.8279E+06
x( M)	0.0000	12.240	6.6600	0.0000	0.0000	9.5400	5.0400	12.240	18.000	0.0000	0.0000
12	-2.0238E-03	-7.3166E-06	-492.75	-175.98	-448.05	-14.271	-132.47	-3.7205	2049.5	7.8279E+06	7.8279E+06
x( M)	0.0000	11.340	6.3000	0.0000	0.0000	9.0000	5.0400	11.700	18.000	0.0000	0.0000
13	-2.0549E-03	-5.2216E-06	-419.89	-81.338	-341.40	-6.8298	-97.357	-1.7440	569.29	7.8279E+06	7.8279E+06
x( M)	0.0000	12.240	6.6600	0.0000	0.0000	9.5400	5.0400	12.240	18.000	0.0000	0.0000
14	-2.0549E-03	-6.2905E-06	-408.75	-99.448	-326.60	-7.7438	-92.453	-1.9524	1100.8	7.8279E+06	7.8279E+06
x( M)	0.0000	12.420	6.6600	0.0000	0.0000	9.7200	5.0400	12.240	18.000	0.0000	0.0000
15	-2.0549E-03	-7.2027E-06	-419.65	-123.58	-340.35	-9.3605	-97.127	-2.3988	1632.3	7.8279E+06	7.8279E+06
x( M)	0.0000	12.240	6.6600	0.0000	0.0000	9.5400	5.0400	12.240	18.000	0.0000	0.0000
16	-2.0549E-03	-7.3161E-06	-500.68	-175.95	-456.38	-14.270	-134.94	-3.7204	2018.9	7.8279E+06	7.8279E+06
x( M)	0.0000	11.340	6.3000	0.0000	0.0000	9.0000	5.0400	11.700	18.000	0.0000	0.0000
17	-2.0860E-03	-5.0407E-06	-453.07	-87.398	-383.95	-7.5516	-111.19	-1.9566	523.88	7.8279E+06	7.8279E+06
x( M)	0.0000	11.880	6.4800	0.0000	0.0000	9.3600	5.0400	12.240	18.000	0.0000	0.0000
18	-2.0860E-03	-6.0918E-06	-441.12	-106.57	-367.37	-8.5723	-105.74	-2.2228	1055.4	7.8279E+06	7.8279E+06
x( M)	0.0000	12.060	6.6600	0.0000	0.0000	9.3600	5.0400	12.240	18.000	0.0000	0.0000
19	-2.0860E-03	-6.9657E-06	-451.43	-131.73	-380.93	-10.314	-110.31	-2.6930	1586.9	7.8279E+06	7.8279E+06
x( M)	0.0000	11.880	6.4800	0.0000	0.0000	9.3600	5.0400	12.240	18.000	0.0000	0.0000
20	-2.0860E-03	-7.1853E-06	-522.16	-181.14	-485.65	-14.883	-143.99	-3.8747	1988.3	7.8279E+06	7.8279E+06
x( M)	0.0000	11.160	6.1200	0.0000	0.0000	8.8200	5.0400	11.520	18.000	0.0000	0.0000
Min.	-2.0860E-03	-7.3166E-06	-522.16	-181.50	-485.65	-14.915	-143.99	-3.8827	523.88	7.8279E+06	7.8279E+06
Pile N.	17	12	20	4	20	4	20	4	17	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	5.6001E-05	1.7578E-04	957.47	38.266	84.457	32.423	21.847	9.3855	3607.3	7.8279E+06	7.8279E+06
x( M)	11.880	0.0000	0.0000	6.4800	9.1800	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
2	5.6980E-05	2.0687E-04	927.71	44.160	81.007	37.894	20.885	10.832	4055.4	7.8279E+06	7.8279E+06
x( M)	11.880	0.0000	0.0000	6.6600	9.3600	0.0000	12.240	5.0400	0.0000	0.0000	0.0000



<b>APPALTATORE:</b> Consorzio  Soci  		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria  Mandanti  							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>							COMMESSA <b>IF28</b>

3	5.6271E-05	2.3796E-04	952.90	52.215	84.057	46.340	21.738	13.269	4655.8	7.8279E+06	7.8279E+06
x( M)	11.880	0.0000	0.0000	6.6600	9.3600	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
4	5.1110E-05	2.6906E-04	1136.0	68.537	106.27	67.475	27.333	19.824	5582.8	7.8279E+06	7.8279E+06
x( M)	10.980	0.0000	0.0000	6.3000	8.8200	0.0000	11.520	5.0400	0.0000	0.0000	0.0000
5	5.9077E-05	1.7578E-04	908.61	35.936	77.373	29.247	19.750	8.3342	3413.3	7.8279E+06	7.8279E+06
x( M)	12.240	0.0000	0.0000	6.6600	9.5400	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
6	5.9993E-05	2.0687E-04	879.87	41.433	74.013	34.212	18.657	9.5992	3864.0	7.8279E+06	7.8279E+06
x( M)	12.240	0.0000	0.0000	6.8400	9.5400	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
7	5.9249E-05	2.3796E-04	907.47	49.157	77.390	42.101	19.748	11.851	4485.9	7.8279E+06	7.8279E+06
x( M)	12.240	0.0000	0.0000	6.8400	9.5400	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
8	5.2935E-05	2.6906E-04	1123.9	66.689	103.52	64.517	26.630	18.887	5513.3	7.8279E+06	7.8279E+06
x( M)	11.160	0.0000	0.0000	6.3000	8.8200	0.0000	11.700	5.0400	0.0000	0.0000	0.0000
9	6.0092E-05	1.7578E-04	928.39	35.894	78.482	29.185	20.029	8.3171	3427.3	7.8279E+06	7.8279E+06
x( M)	12.240	0.0000	0.0000	6.6600	9.5400	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
10	6.0999E-05	2.0687E-04	899.17	41.385	75.057	34.142	18.913	9.5795	3876.5	7.8279E+06	7.8279E+06
x( M)	12.240	0.0000	0.0000	6.8400	9.5400	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
11	6.0265E-05	2.3796E-04	927.29	49.103	78.507	42.018	20.029	11.828	4501.0	7.8279E+06	7.8279E+06
x( M)	12.240	0.0000	0.0000	6.8400	9.5400	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
12	5.3810E-05	2.6906E-04	1148.7	66.677	105.19	64.485	27.079	18.884	5556.6	7.8279E+06	7.8279E+06
x( M)	11.160	0.0000	0.0000	6.3000	8.8200	0.0000	11.700	5.0400	0.0000	0.0000	0.0000
13	6.1038E-05	1.7578E-04	950.26	35.920	79.839	29.213	20.386	8.3303	3447.7	7.8279E+06	7.8279E+06
x( M)	12.240	0.0000	0.0000	6.6600	9.5400	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
14	6.1955E-05	2.0687E-04	920.48	41.415	76.348	34.175	19.250	9.5947	3895.0	7.8279E+06	7.8279E+06
x( M)	12.240	0.0000	0.0000	6.8400	9.5400	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
15	6.1213E-05	2.3796E-04	949.13	49.139	79.864	42.058	20.387	11.847	4521.0	7.8279E+06	7.8279E+06
x( M)	12.240	0.0000	0.0000	6.8400	9.5400	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
16	5.4680E-05	2.6906E-04	1173.6	66.675	106.88	64.466	27.533	18.886	5600.5	7.8279E+06	7.8279E+06
x( M)	11.160	0.0000	0.0000	6.3000	8.8200	0.0000	11.700	5.0400	0.0000	0.0000	0.0000
17	5.9870E-05	1.7578E-04	1043.5	38.158	89.682	32.247	23.247	9.3436	3684.4	7.8279E+06	7.8279E+06
x( M)	11.880	0.0000	0.0000	6.4800	9.3600	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
18	6.0896E-05	2.0687E-04	1011.2	44.021	85.918	37.670	22.185	10.775	4124.2	7.8279E+06	7.8279E+06
x( M)	12.060	0.0000	0.0000	6.6600	9.3600	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
19	6.0153E-05	2.3796E-04	1038.6	52.071	89.268	46.092	23.128	13.209	4746.6	7.8279E+06	7.8279E+06
x( M)	11.880	0.0000	0.0000	6.6600	9.3600	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
20	5.4554E-05	2.6906E-04	1236.9	68.449	113.19	67.266	29.173	19.791	5761.0	7.8279E+06	7.8279E+06
x( M)	10.980	0.0000	0.0000	6.3000	8.8200	0.0000	11.520	5.0400	0.0000	0.0000	0.0000
Max.	6.1955E-05	2.6906E-04	1236.9	68.537	113.19	67.475	29.173	19.824	5761.0	7.8279E+06	7.8279E+06
Pile N.	14	4	20	4	20	4	20	4	20	1	1

LOAD CASE : 5  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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	0.5898	1.0000
2	0.5493	1.0000
3	0.5832	1.0000
4	0.8661	1.0000
5	0.4969	1.0000
6	0.4621	1.0000
7	0.4951	1.0000
8	0.8023	1.0000
9	0.4953	1.0000
10	0.4606	1.0000
11	0.4936	1.0000
12	0.8020	1.0000
13	0.4963	1.0000
14	0.4615	1.0000
15	0.4946	1.0000
16	0.8020	1.0000
17	0.5845	1.0000
18	0.5437	1.0000
19	0.5779	1.0000
20	0.8625	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
43281.8	-5422.16	716.464
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-1787.77	7579.56	50905.1

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

APPALTATORE:

Consorzio

Soci



ITINERARIO NAPOLI – BARI

RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

PROGETTAZIONE:

Mandatario

Mandanti



PROGETTO ESECUTIVO

RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 218 di 354
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VERTICAL , M 1.32419E-03	HORIZONTAL Y, M -1.42848E-03	HORIZONTAL Z, M 1.77269E-04
ANGLE ROT. X,RAD -4.63536E-06	ANGLE ROT. Y,RAD 7.62719E-06	ANGLE ROT. Z,RAD 8.01755E-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	8.5165E-04	-1.3868E-03	1.4598E-04	-4.6354E-06	7.6272E-06	8.0176E-05
2	1.2124E-03	-1.3868E-03	1.6684E-04	-4.6354E-06	7.6272E-06	8.0176E-05
3	1.5732E-03	-1.3868E-03	1.8770E-04	-4.6354E-06	7.6272E-06	8.0176E-05
4	1.9340E-03	-1.3868E-03	2.0856E-04	-4.6354E-06	7.6272E-06	8.0176E-05
5	8.1733E-04	-1.4076E-03	1.4598E-04	-4.6354E-06	7.6272E-06	8.0176E-05
6	1.1781E-03	-1.4076E-03	1.6684E-04	-4.6354E-06	7.6272E-06	8.0176E-05
7	1.5389E-03	-1.4076E-03	1.8770E-04	-4.6354E-06	7.6272E-06	8.0176E-05
8	1.8997E-03	-1.4076E-03	2.0856E-04	-4.6354E-06	7.6272E-06	8.0176E-05
9	7.8300E-04	-1.4285E-03	1.4598E-04	-4.6354E-06	7.6272E-06	8.0176E-05
10	1.1438E-03	-1.4285E-03	1.6684E-04	-4.6354E-06	7.6272E-06	8.0176E-05
11	1.5046E-03	-1.4285E-03	1.8770E-04	-4.6354E-06	7.6272E-06	8.0176E-05
12	1.8654E-03	-1.4285E-03	2.0856E-04	-4.6354E-06	7.6272E-06	8.0176E-05
13	7.4868E-04	-1.4493E-03	1.4598E-04	-4.6354E-06	7.6272E-06	8.0176E-05
14	1.1095E-03	-1.4493E-03	1.6684E-04	-4.6354E-06	7.6272E-06	8.0176E-05
15	1.4703E-03	-1.4493E-03	1.8770E-04	-4.6354E-06	7.6272E-06	8.0176E-05
16	1.8311E-03	-1.4493E-03	2.0856E-04	-4.6354E-06	7.6272E-06	8.0176E-05
17	7.1436E-04	-1.4702E-03	1.4598E-04	-4.6354E-06	7.6272E-06	8.0176E-05
18	1.0751E-03	-1.4702E-03	1.6684E-04	-4.6354E-06	7.6272E-06	8.0176E-05
19	1.4359E-03	-1.4702E-03	1.8770E-04	-4.6354E-06	7.6272E-06	8.0176E-05
20	1.7967E-03	-1.4702E-03	2.0856E-04	-4.6354E-06	7.6272E-06	8.0176E-05
MINIMUM	7.1436E-04	-1.4702E-03	1.4598E-04	-4.6354E-06	7.6272E-06	8.0176E-05
Pile N.	17	17	1	1	1	1
MAXIMUM	1.9340E-03	-1.3868E-03	2.0856E-04	-4.6354E-06	7.6272E-06	8.0176E-05
Pile N.	4	1	4	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	1396.0	-261.71	28.141	-1.6256	-78.386	-716.58
2	1985.0	-250.68	31.590	-1.6256	-90.861	-695.00
3	2574.1	-259.73	37.489	-1.6256	-108.22	-713.11
4	3122.2	-329.49	53.247	-1.6256	-144.28	-844.86
5	1340.0	-240.35	25.396	-1.6256	-72.891	-679.47
6	1929.0	-230.01	28.512	-1.6256	-84.585	-658.53
7	2518.0	-239.62	34.044	-1.6256	-101.26	-678.44
8	3084.5	-320.29	50.905	-1.6256	-139.95	-834.54
9	1283.9	-244.21	25.343	-1.6256	-72.784	-692.69
10	1873.0	-233.73	28.454	-1.6256	-84.465	-671.43
11	2462.0	-243.50	33.978	-1.6256	-101.13	-691.69
12	3046.7	-325.87	50.885	-1.6256	-139.92	-851.22
13	1227.9	-248.85	25.371	-1.6256	-72.841	-707.49
14	1816.9	-238.19	28.486	-1.6256	-84.531	-685.86
15	2406.0	-248.14	34.016	-1.6256	-101.21	-706.48
16	2995.0	-331.53	50.878	-1.6256	-139.91	-868.06
17	1171.9	-279.34	27.978	-1.6256	-78.066	-774.02
18	1760.9	-267.43	31.386	-1.6256	-90.453	-750.62
19	2349.9	-277.22	37.274	-1.6256	-107.79	-770.29
20	2938.9	-352.26	53.090	-1.6256	-143.99	-912.51
MINIMUM	1171.9	-352.26	25.343	-1.6256	-144.28	-912.51
Pile N.	17	20	9	1	4	20
MAXIMUM	3122.2	-230.01	53.247	-1.6256	-72.784	-658.53
Pile N.	4	6	4	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	8.5165E-04	-1.3868E-03	1.4598E-04	-4.6354E-06	7.6272E-06	8.0176E-05
2	1.2124E-03	-1.3868E-03	1.6684E-04	-4.6354E-06	7.6272E-06	8.0176E-05
3	1.5732E-03	-1.3868E-03	1.8770E-04	-4.6354E-06	7.6272E-06	8.0176E-05
4	1.9340E-03	-1.3868E-03	2.0856E-04	-4.6354E-06	7.6272E-06	8.0176E-05
5	8.1733E-04	-1.4076E-03	1.4598E-04	-4.6354E-06	7.6272E-06	8.0176E-05
6	1.1781E-03	-1.4076E-03	1.6684E-04	-4.6354E-06	7.6272E-06	8.0176E-05
7	1.5389E-03	-1.4076E-03	1.8770E-04	-4.6354E-06	7.6272E-06	8.0176E-05
8	1.8997E-03	-1.4076E-03	2.0856E-04	-4.6354E-06	7.6272E-06	8.0176E-05

APPALTATORE:

Consorzio

Soci



ITINERARIO NAPOLI – BARI

PROGETTAZIONE:

Mandataria

Mandanti



RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

PROGETTO ESECUTIVO

RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 219 di 354
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9	7.8300E-04	-1.4285E-03	1.4598E-04	-4.6354E-06	7.6272E-06	8.0176E-05
10	1.1438E-03	-1.4285E-03	1.6684E-04	-4.6354E-06	7.6272E-06	8.0176E-05
11	1.5046E-03	-1.4285E-03	1.8770E-04	-4.6354E-06	7.6272E-06	8.0176E-05
12	1.8654E-03	-1.4285E-03	2.0856E-04	-4.6354E-06	7.6272E-06	8.0176E-05
13	7.4868E-04	-1.4493E-03	1.4598E-04	-4.6354E-06	7.6272E-06	8.0176E-05
14	1.1095E-03	-1.4493E-03	1.6684E-04	-4.6354E-06	7.6272E-06	8.0176E-05
15	1.4703E-03	-1.4493E-03	1.8770E-04	-4.6354E-06	7.6272E-06	8.0176E-05
16	1.8311E-03	-1.4493E-03	2.0856E-04	-4.6354E-06	7.6272E-06	8.0176E-05
17	7.1436E-04	-1.4702E-03	1.4598E-04	-4.6354E-06	7.6272E-06	8.0176E-05
18	1.0751E-03	-1.4702E-03	1.6684E-04	-4.6354E-06	7.6272E-06	8.0176E-05
19	1.4359E-03	-1.4702E-03	1.8770E-04	-4.6354E-06	7.6272E-06	8.0176E-05
20	1.7967E-03	-1.4702E-03	2.0856E-04	-4.6354E-06	7.6272E-06	8.0176E-05
MINIMUM	7.1436E-04	-1.4702E-03	1.4598E-04	-4.6354E-06	7.6272E-06	8.0176E-05
Pile N.	17	17	1	1	1	1
MAXIMUM	1.9340E-03	-1.3868E-03	2.0856E-04	-4.6354E-06	7.6272E-06	8.0176E-05
Pile N.	4	1	4	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	1396.0	-261.71	28.141	-1.6256	-78.386	-716.58
2	1985.0	-250.68	31.590	-1.6256	-90.861	-695.00
3	2574.1	-259.73	37.489	-1.6256	-108.22	-713.11
4	3122.2	-329.49	53.247	-1.6256	-144.28	-844.86
5	1340.0	-240.35	25.396	-1.6256	-72.891	-679.47
6	1929.0	-230.01	28.512	-1.6256	-84.585	-658.53
7	2518.0	-239.62	34.044	-1.6256	-101.26	-678.44
8	3084.5	-320.29	50.905	-1.6256	-139.95	-834.54
9	1283.9	-244.21	25.343	-1.6256	-72.784	-692.69
10	1873.0	-233.73	28.454	-1.6256	-84.465	-671.43
11	2462.0	-243.50	33.978	-1.6256	-101.13	-691.69
12	3046.7	-325.87	50.885	-1.6256	-139.92	-851.22
13	1227.9	-248.85	25.371	-1.6256	-72.841	-707.49
14	1816.9	-238.19	28.486	-1.6256	-84.531	-685.86
15	2406.0	-248.14	34.016	-1.6256	-101.21	-706.48
16	2995.0	-331.53	50.878	-1.6256	-139.91	-868.06
17	1171.9	-279.34	27.978	-1.6256	-78.066	-774.02
18	1760.9	-267.43	31.386	-1.6256	-90.453	-750.62
19	2349.9	-277.22	37.274	-1.6256	-107.79	-770.29
20	2938.9	-352.26	53.090	-1.6256	-143.99	-912.51
MINIMUM	1171.9	-352.26	25.343	-1.6256	-144.28	-912.51
Pile N.	17	20	9	1	4	20
MAXIMUM	3122.2	-230.01	53.247	-1.6256	-72.784	-658.53
Pile N.	4	6	4	1	9	6

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







1	2965.5
2	3238.7
3	3633.5
4	4353.6
5	2820.7
6	3095.4
7	3495.1
8	4299.3
9	2828.6
10	3102.3
11	3503.0
12	4327.6
13	2841.4
14	3113.8
15	3515.5
16	4348.5
17	3011.0
18	3278.3
19	3677.2
20	4451.2
MINIMUM	2820.7
Pile N.	5
MAXIMUM	4451.2
Pile N.	20

\* 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	-1.3868E-03	-4.2224E-06	-303.09	-78.386	-261.72	-6.3643	-75.073	-1.6571	789.98	7.8279E+06	7.8279E+06
x( M)	0.0000	11.880	6.4800	0.0000	0.0000	9.3600	5.0400	12.240	18.000	0.0000	0.0000
2	-1.3868E-03	-4.9398E-06	-295.21	-90.861	-250.70	-7.0029	-71.463	-1.8213	1123.3	7.8279E+06	7.8279E+06
x( M)	0.0000	12.060	6.6600	0.0000	0.0000	9.5400	5.0400	12.240	18.000	0.0000	0.0000



<b>APPALTATORE:</b> Consorzio  Soci  		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria  Mandanti  							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>							

Pile N. 14 4 20 4 20 4 20 4 20 1 1

LOAD CASE : 6  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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	0.5947	1.0000
2	0.5539	1.0000
3	0.5870	1.0000
4	0.8661	1.0000
5	0.4982	1.0000
6	0.4626	1.0000
7	0.4951	1.0000
8	0.7995	1.0000
9	0.4960	1.0000
10	0.4606	1.0000
11	0.4931	1.0000
12	0.7988	1.0000
13	0.4970	1.0000
14	0.4615	1.0000
15	0.4941	1.0000
16	0.7988	1.0000
17	0.5845	1.0000
18	0.5431	1.0000
19	0.5768	1.0000
20	0.8591	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN 48724.4	HOR. LOAD Y, KN -4544.72	HOR. LOAD Z, KN 877.148
MOMENT X, KN- M -2550.97	MOMENT Y, KN- M 10542.0	MOMENT Z, KN- M 57456.7

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL, M 1.50968E-03	HORIZONTAL Y, M -1.26609E-03	HORIZONTAL Z, M 2.20550E-04
ANGLE ROT. X, RAD -6.86555E-06	ANGLE ROT. Y, RAD 1.06990E-05	ANGLE ROT. Z, RAD 8.94665E-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	1.0021E-03	-1.2043E-03	1.7421E-04	-6.8655E-06	1.0699E-05	8.9466E-05
2	1.4047E-03	-1.2043E-03	2.0510E-04	-6.8655E-06	1.0699E-05	8.9466E-05
3	1.8073E-03	-1.2043E-03	2.3600E-04	-6.8655E-06	1.0699E-05	8.9466E-05
4	2.2099E-03	-1.2043E-03	2.6689E-04	-6.8655E-06	1.0699E-05	8.9466E-05
5	9.5393E-04	-1.2352E-03	1.7421E-04	-6.8655E-06	1.0699E-05	8.9466E-05
6	1.3565E-03	-1.2352E-03	2.0510E-04	-6.8655E-06	1.0699E-05	8.9466E-05
7	1.7591E-03	-1.2352E-03	2.3600E-04	-6.8655E-06	1.0699E-05	8.9466E-05
8	2.1617E-03	-1.2352E-03	2.6689E-04	-6.8655E-06	1.0699E-05	8.9466E-05
9	9.0578E-04	-1.2661E-03	1.7421E-04	-6.8655E-06	1.0699E-05	8.9466E-05
10	1.3084E-03	-1.2661E-03	2.0510E-04	-6.8655E-06	1.0699E-05	8.9466E-05
11	1.7110E-03	-1.2661E-03	2.3600E-04	-6.8655E-06	1.0699E-05	8.9466E-05
12	2.1136E-03	-1.2661E-03	2.6689E-04	-6.8655E-06	1.0699E-05	8.9466E-05
13	8.5764E-04	-1.2970E-03	1.7421E-04	-6.8655E-06	1.0699E-05	8.9466E-05
14	1.2602E-03	-1.2970E-03	2.0510E-04	-6.8655E-06	1.0699E-05	8.9466E-05
15	1.6628E-03	-1.2970E-03	2.3600E-04	-6.8655E-06	1.0699E-05	8.9466E-05
16	2.0654E-03	-1.2970E-03	2.6689E-04	-6.8655E-06	1.0699E-05	8.9466E-05
17	8.0949E-04	-1.3279E-03	1.7421E-04	-6.8655E-06	1.0699E-05	8.9466E-05
18	1.2121E-03	-1.3279E-03	2.0510E-04	-6.8655E-06	1.0699E-05	8.9466E-05
19	1.6147E-03	-1.3279E-03	2.3600E-04	-6.8655E-06	1.0699E-05	8.9466E-05
20	2.0173E-03	-1.3279E-03	2.6689E-04	-6.8655E-06	1.0699E-05	8.9466E-05
MINIMUM	8.0949E-04	-1.3279E-03	1.7421E-04	-6.8655E-06	1.0699E-05	8.9466E-05

<b>APPALTATORE:</b> Consorzio  Soci  		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria  Mandanti  							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>							COMMESSA <b>IF28</b>

Pile N.	17	17	1	1	1	1
MAXIMUM	2.2099E-03	-1.2043E-03	2.6689E-04	-6.8655E-06	1.0699E-05	8.9466E-05
Pile N.	4	1	4	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	1641.6	-214.19	32.620	-2.4077	-88.119	-552.71
2	2298.9	-204.89	38.122	-2.4077	-107.39	-534.78
3	2956.2	-212.26	46.556	-2.4077	-132.48	-549.40
4	3425.8	-269.91	67.433	-2.4077	-181.11	-657.13
5	1563.0	-198.48	29.308	-2.4077	-81.535	-530.07
6	2220.3	-189.54	34.246	-2.4077	-99.530	-512.18
7	2877.6	-197.53	42.109	-2.4077	-123.54	-528.60
8	3372.8	-265.27	64.317	-2.4077	-175.37	-658.48
9	1484.4	-204.41	29.227	-2.4077	-81.371	-550.07
10	2141.7	-195.24	34.155	-2.4077	-99.341	-531.69
11	2799.0	-203.47	42.005	-2.4077	-123.32	-548.64
12	3319.9	-273.52	64.273	-2.4077	-175.29	-683.17
13	1405.8	-211.12	29.259	-2.4077	-81.435	-571.66
14	2063.1	-201.57	34.174	-2.4077	-99.380	-552.49
15	2720.4	-210.16	42.050	-2.4077	-123.42	-570.19
16	3266.9	-281.92	64.261	-2.4077	-175.27	-708.12
17	1327.2	-240.18	32.262	-2.4077	-87.417	-637.59
18	1984.5	-229.54	37.656	-2.4077	-106.46	-616.88
19	2641.8	-238.01	46.051	-2.4077	-131.48	-633.82
20	3213.9	-303.53	67.065	-2.4077	-180.45	-757.14
MINIMUM	1327.2	-303.53	29.227	-2.4077	-181.11	-757.14
Pile N.	17	20	9	1	4	20
MAXIMUM	3425.8	-189.54	67.433	-2.4077	-81.371	-512.18
Pile N.	4	6	4	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	1.0021E-03	-1.2043E-03	1.7421E-04	-6.8655E-06	1.0699E-05	8.9466E-05
2	1.4047E-03	-1.2043E-03	2.0510E-04	-6.8655E-06	1.0699E-05	8.9466E-05
3	1.8073E-03	-1.2043E-03	2.3600E-04	-6.8655E-06	1.0699E-05	8.9466E-05
4	2.2099E-03	-1.2043E-03	2.6689E-04	-6.8655E-06	1.0699E-05	8.9466E-05
5	9.5393E-04	-1.2352E-03	1.7421E-04	-6.8655E-06	1.0699E-05	8.9466E-05
6	1.3565E-03	-1.2352E-03	2.0510E-04	-6.8655E-06	1.0699E-05	8.9466E-05
7	1.7591E-03	-1.2352E-03	2.3600E-04	-6.8655E-06	1.0699E-05	8.9466E-05
8	2.1617E-03	-1.2352E-03	2.6689E-04	-6.8655E-06	1.0699E-05	8.9466E-05
9	9.0578E-04	-1.2661E-03	1.7421E-04	-6.8655E-06	1.0699E-05	8.9466E-05
10	1.3084E-03	-1.2661E-03	2.0510E-04	-6.8655E-06	1.0699E-05	8.9466E-05
11	1.7110E-03	-1.2661E-03	2.3600E-04	-6.8655E-06	1.0699E-05	8.9466E-05
12	2.1136E-03	-1.2661E-03	2.6689E-04	-6.8655E-06	1.0699E-05	8.9466E-05
13	8.5764E-04	-1.2970E-03	1.7421E-04	-6.8655E-06	1.0699E-05	8.9466E-05
14	1.2602E-03	-1.2970E-03	2.0510E-04	-6.8655E-06	1.0699E-05	8.9466E-05
15	1.6628E-03	-1.2970E-03	2.3600E-04	-6.8655E-06	1.0699E-05	8.9466E-05
16	2.0654E-03	-1.2970E-03	2.6689E-04	-6.8655E-06	1.0699E-05	8.9466E-05
17	8.0949E-04	-1.3279E-03	1.7421E-04	-6.8655E-06	1.0699E-05	8.9466E-05
18	1.2121E-03	-1.3279E-03	2.0510E-04	-6.8655E-06	1.0699E-05	8.9466E-05
19	1.6147E-03	-1.3279E-03	2.3600E-04	-6.8655E-06	1.0699E-05	8.9466E-05
20	2.0173E-03	-1.3279E-03	2.6689E-04	-6.8655E-06	1.0699E-05	8.9466E-05
MINIMUM	8.0949E-04	-1.3279E-03	1.7421E-04	-6.8655E-06	1.0699E-05	8.9466E-05
Pile N.	17	17	1	1	1	1
MAXIMUM	2.2099E-03	-1.2043E-03	2.6689E-04	-6.8655E-06	1.0699E-05	8.9466E-05
Pile N.	4	1	4	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	1641.6	-214.19	32.620	-2.4077	-88.119	-552.71
2	2298.9	-204.89	38.122	-2.4077	-107.39	-534.78
3	2956.2	-212.26	46.556	-2.4077	-132.48	-549.40
4	3425.8	-269.91	67.433	-2.4077	-181.11	-657.13
5	1563.0	-198.48	29.308	-2.4077	-81.535	-530.07
6	2220.3	-189.54	34.246	-2.4077	-99.530	-512.18
7	2877.6	-197.53	42.109	-2.4077	-123.54	-528.60
8	3372.8	-265.27	64.317	-2.4077	-175.37	-658.48
9	1484.4	-204.41	29.227	-2.4077	-81.371	-550.07
10	2141.7	-195.24	34.155	-2.4077	-99.341	-531.69
11	2799.0	-203.47	42.005	-2.4077	-123.32	-548.64
12	3319.9	-273.52	64.273	-2.4077	-175.29	-683.17
13	1405.8	-211.12	29.259	-2.4077	-81.435	-571.66
14	2063.1	-201.57	34.174	-2.4077	-99.380	-552.49
15	2720.4	-210.16	42.050	-2.4077	-123.42	-570.19
16	3266.9	-281.92	64.261	-2.4077	-175.27	-708.12

APPALTATORE:

Consorzio

Soci



ITINERARIO NAPOLI – BARI

PROGETTAZIONE:

Mandatario

Mandanti



RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

PROGETTO ESECUTIVO

RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO
IF28	01	E ZZ CL	VI0403 001	B	223 di 354

17	1327.2	-240.18	32.262	-2.4077	-87.417	-637.59
18	1984.5	-229.54	37.656	-2.4077	-106.46	-616.88
19	2641.8	-238.01	46.051	-2.4077	-131.48	-633.82
20	3213.9	-303.53	67.065	-2.4077	-180.45	-757.14
MINIMUM	1327.2	-303.53	29.227	-2.4077	-181.11	-757.14
Pile N.	17	20	9	1	4	20
MAXIMUM	3425.8	-189.54	67.433	-2.4077	-81.371	-512.18
Pile N.	4	6	4	1	9	6



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

*****	*****
1	2618.1
2	2947.1
3	3378.5
4	3995.8
5	2503.1
6	2831.1
7	3266.7
8	3965.3
9	2518.2
10	2844.4
11	3281.0
12	4007.3
13	2538.2
14	2861.7
15	3300.1
16	4050.3
17	2693.3
18	3012.3
19	3448.5
20	4167.8
MINIMUM	2503.1
Pile N.	5
MAXIMUM	4167.8
Pile N.	20

\* 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	-1.2043E-03	-4.9826E-06	-261.24	-88.119	-214.20	-7.5750	-62.102	-1.9632	928.95	7.8279E+06	7.8279E+06
x(M)	0.0000	11.880	6.4800	0.0000	0.0000	9.1800	5.0400	12.240	18.000	0.0000	0.0000
2	-1.2043E-03	-6.0225E-06	-254.72	-107.39	-204.90	-8.6111	-59.106	-2.2351	1300.9	7.8279E+06	7.8279E+06
x(M)	0.0000	12.060	6.4800	0.0000	0.0000	9.3600	5.0400	12.240	18.000	0.0000	0.0000
3	-1.2043E-03	-6.8936E-06	-260.12	-132.48	-212.28	-10.337	-61.527	-2.6999	1672.8	7.8279E+06	7.8279E+06
x(M)	0.0000	11.880	6.4800	0.0000	0.0000	9.3600	5.0400	12.240	18.000	0.0000	0.0000
4	-1.2043E-03	-7.1263E-06	-299.34	-181.11	-269.93	-14.802	-79.697	-3.8526	1938.6	7.8279E+06	7.8279E+06
x(M)	0.0000	11.160	6.1200	0.0000	0.0000	8.8200	5.0400	11.520	18.000	0.0000	0.0000
5	-1.2352E-03	-5.1787E-06	-251.34	-81.535	-198.49	-6.7972	-56.629	-1.7368	884.47	7.8279E+06	7.8279E+06
x(M)	0.0000	12.240	6.4800	0.0000	0.0000	9.5400	5.0400	12.240	18.000	0.0000	0.0000
6	-1.2352E-03	-6.2418E-06	-244.72	-99.530	-189.55	-7.6978	-53.702	-1.9420	1256.4	7.8279E+06	7.8279E+06
x(M)	0.0000	12.420	6.6600	0.0000	0.0000	9.7200	5.0400	12.240	18.000	0.0000	0.0000
7	-1.2352E-03	-7.1481E-06	-250.85	-123.54	-197.54	-9.2964	-56.366	-2.3825	1628.4	7.8279E+06	7.8279E+06
x(M)	0.0000	12.240	6.6600	0.0000	0.0000	9.5400	5.0400	12.240	18.000	0.0000	0.0000
8	-1.2352E-03	-7.2685E-06	-298.78	-175.37	-265.30	-14.131	-78.123	-3.6833	1908.6	7.8279E+06	7.8279E+06
x(M)	0.0000	11.340	6.1200	0.0000	0.0000	9.0000	5.0400	11.700	18.000	0.0000	0.0000
9	-1.2661E-03	-5.1833E-06	-257.49	-81.371	-204.42	-6.7783	-58.215	-1.7308	839.99	7.8279E+06	7.8279E+06
x(M)	0.0000	12.240	6.6600	0.0000	0.0000	9.5400	5.0400	12.240	18.000	0.0000	0.0000
10	-1.2661E-03	-6.2463E-06	-250.68	-99.341	-195.25	-7.6767	-55.209	-1.9346	1211.9	7.8279E+06	7.8279E+06
x(M)	0.0000	12.420	6.6600	0.0000	0.0000	9.7200	5.0400	12.240	18.000	0.0000	0.0000
11	-1.2661E-03	-7.1525E-06	-257.04	-123.32	-203.49	-9.2713	-57.959	-2.3744	1583.9	7.8279E+06	7.8279E+06
x(M)	0.0000	12.240	6.6600	0.0000	0.0000	9.5400	5.0400	12.240	18.000	0.0000	0.0000
12	-1.2661E-03	-7.2698E-06	-306.46	-175.29	-273.55	-14.123	-80.502	-3.6812	1878.7	7.8279E+06	7.8279E+06
x(M)	0.0000	11.340	6.1200	0.0000	0.0000	9.0000	5.0400	11.700	18.000	0.0000	0.0000
13	-1.2970E-03	-5.1804E-06	-264.24	-81.435	-211.13	-6.7862	-60.063	-1.7334	795.51	7.8279E+06	7.8279E+06
x(M)	0.0000	12.240	6.6600	0.0000	0.0000	9.5400	5.0400	12.240	18.000	0.0000	0.0000
14	-1.2970E-03	-6.2429E-06	-257.19	-99.380	-201.58	-7.6852	-56.976	-1.9377	1167.5	7.8279E+06	7.8279E+06
x(M)	0.0000	12.420	6.6600	0.0000	0.0000	9.7200	5.0400	12.240	18.000	0.0000	0.0000
15	-1.2970E-03	-7.1491E-06	-263.77	-123.42	-210.18	-9.2829	-59.801	-2.3782	1539.4	7.8279E+06	7.8279E+06
x(M)	0.0000	12.240	6.6600	0.0000	0.0000	9.5400	5.0400	12.240	18.000	0.0000	0.0000
16	-1.2970E-03	-7.2694E-06	-314.24	-175.27	-281.94	-14.123	-82.928	-3.6811	1848.7	7.8279E+06	7.8279E+06
x(M)	0.0000	11.340	6.1200	0.0000	0.0000	9.0000	5.0400	11.700	18.000	0.0000	0.0000
17	-1.3279E-03	-5.0028E-06	-287.51	-87.417	-240.19	-7.4948	-69.255	-1.9417	751.03	7.8279E+06	7.8279E+06
x(M)	0.0000	11.880	6.4800	0.0000	0.0000	9.3600	5.0400	12.240	18.000	0.0000	0.0000
18	-1.3279E-03	-6.0480E-06	-279.85	-106.46	-229.55	-8.5003	-65.798	-2.2035	1123.0	7.8279E+06	7.8279E+06
x(M)	0.0000	12.060	6.4800	0.0000	0.0000	9.3600	5.0400	12.240	18.000	0.0000	0.0000
19	-1.3279E-03	-6.9159E-06	-286.21	-131.48	-238.03	-10.221	-68.603	-2.6680	1494.9	7.8279E+06	7.8279E+06
x(M)	0.0000	11.880	6.4800	0.0000	0.0000	9.3600	5.0400	12.240	18.000	0.0000	0.0000
20	-1.3279E-03	-7.1392E-06	-330.62	-180.45	-303.56	-14.729	-89.450	-3.8336	1818.7	7.8279E+06	7.8279E+06
x(M)	0.0000	11.160	6.1200	0.0000	0.0000	8.8200	5.0400	11.520	18.000	0.0000	0.0000
Min.	-1.3279E-03	-7.2698E-06	-330.62	-181.11	-303.56	-14.802	-89.450	-3.8526	751.03	7.8279E+06	7.8279E+06

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   		
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>		

PILE N.	17	12	20	4	20	4	20	4	17	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	3.4053E-05	1.7421E-04	552.71	38.109	51.908	32.622	13.326	9.3727	2618.1	7.8279E+06	7.8279E+06
x( M)	11.700	0.0000	6.4800	0.0000	9.1800	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
2	3.4647E-05	2.0510E-04	534.78	43.987	49.725	38.125	12.763	10.819	2947.1	7.8279E+06	7.8279E+06
x( M)	11.880	0.0000	0.0000	6.6600	9.3600	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
3	3.4203E-05	2.3600E-04	549.40	51.977	51.567	46.560	13.240	13.233	3378.5	7.8279E+06	7.8279E+06
x( M)	11.700	0.0000	0.0000	6.6600	9.1800	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
4	3.1133E-05	2.6689E-04	657.13	68.034	64.796	67.440	16.566	19.662	3995.8	7.8279E+06	7.8279E+06
x( M)	10.980	0.0000	0.0000	6.3000	8.6400	0.0000	11.340	5.0400	0.0000	0.0000	0.0000
5	3.6387E-05	1.7421E-04	530.07	35.696	47.807	29.309	12.179	8.2839	2503.1	7.8279E+06	7.8279E+06
x( M)	12.060	0.0000	0.0000	6.6600	9.3600	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
6	3.6952E-05	2.0510E-04	512.18	41.137	45.718	34.248	11.507	9.5303	2831.1	7.8279E+06	7.8279E+06
x( M)	12.240	0.0000	0.0000	6.8400	9.5400	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
7	3.6489E-05	2.3600E-04	528.60	48.790	47.690	42.113	12.141	11.756	3266.7	7.8279E+06	7.8279E+06
x( M)	12.060	0.0000	0.0000	6.8400	9.3600	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
8	3.2599E-05	2.6689E-04	658.48	66.096	63.580	64.324	16.270	18.682	3965.3	7.8279E+06	7.8279E+06
x( M)	11.160	0.0000	0.0000	6.3000	8.8200	0.0000	11.520	5.0400	0.0000	0.0000	0.0000
9	3.7377E-05	1.7421E-04	550.07	35.637	48.923	29.229	12.464	8.2588	2518.2	7.8279E+06	7.8279E+06
x( M)	12.060	0.0000	0.0000	6.6600	9.5400	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
10	3.7956E-05	2.0510E-04	531.69	41.071	46.781	34.157	11.769	9.5017	2844.4	7.8279E+06	7.8279E+06
x( M)	12.240	0.0000	0.0000	6.8400	9.5400	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
11	3.7478E-05	2.3600E-04	548.64	48.718	48.822	42.009	12.428	11.723	3281.0	7.8279E+06	7.8279E+06
x( M)	12.060	0.0000	0.0000	6.8400	9.5400	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
12	3.3473E-05	2.6689E-04	683.17	66.073	65.227	64.279	16.706	18.673	4007.3	7.8279E+06	7.8279E+06
x( M)	11.160	0.0000	0.0000	6.3000	8.8200	0.0000	11.520	5.0400	0.0000	0.0000	0.0000
13	3.8321E-05	1.7421E-04	571.66	35.663	50.237	29.261	12.808	8.2713	2538.2	7.8279E+06	7.8279E+06
x( M)	12.060	0.0000	0.0000	6.6600	9.5400	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
14	3.8913E-05	2.0510E-04	552.49	41.098	48.024	34.176	12.091	9.5181	2861.7	7.8279E+06	7.8279E+06
x( M)	12.240	0.0000	0.0000	6.8400	9.5400	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
15	3.8424E-05	2.3600E-04	570.19	48.753	50.134	42.054	12.771	11.741	3300.1	7.8279E+06	7.8279E+06
x( M)	12.060	0.0000	0.0000	6.8400	9.5400	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
16	3.4340E-05	2.6689E-04	708.12	66.071	66.906	64.268	17.152	18.674	4050.3	7.8279E+06	7.8279E+06
x( M)	11.160	0.0000	0.0000	6.3000	8.8200	0.0000	11.700	5.0400	0.0000	0.0000	0.0000
17	3.7904E-05	1.7421E-04	637.59	37.861	56.868	32.264	14.679	9.2641	2693.3	7.8279E+06	7.8279E+06
x( M)	11.880	0.0000	0.0000	6.4800	9.1800	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
18	3.8576E-05	2.0510E-04	616.88	43.665	54.439	37.659	14.006	10.674	3012.3	7.8279E+06	7.8279E+06
x( M)	11.880	0.0000	0.0000	6.6600	9.3600	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
19	3.8089E-05	2.3600E-04	633.82	51.641	56.473	46.055	14.577	13.078	3448.5	7.8279E+06	7.8279E+06
x( M)	11.880	0.0000	0.0000	6.6600	9.3600	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
20	3.4587E-05	2.6689E-04	757.14	67.833	71.454	67.071	18.352	19.567	4167.8	7.8279E+06	7.8279E+06
x( M)	10.980	0.0000	0.0000	6.3000	8.8200	0.0000	11.520	5.0400	0.0000	0.0000	0.0000
Max.	3.8913E-05	2.6689E-04	757.14	68.034	71.454	67.440	18.352	19.662	4167.8	7.8279E+06	7.8279E+06
Pile N.	14	4	20	4	20	4	20	4	20	1	1

LOAD CASE : 7  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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	0.5947	1.0000
2	0.5539	1.0000
3	0.5870	1.0000
4	0.8661	1.0000
5	0.4982	1.0000
6	0.4626	1.0000
7	0.4951	1.0000
8	0.7995	1.0000
9	0.4960	1.0000
10	0.4606	1.0000
11	0.4931	1.0000
12	0.7988	1.0000
13	0.4970	1.0000
14	0.4615	1.0000
15	0.4941	1.0000
16	0.7988	1.0000
17	0.5845	1.0000
18	0.5431	1.0000
19	0.5768	1.0000
20	0.8591	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP



<b>APPALTATORE:</b> Consorzio  Soci  	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>											
<b>PROGETTAZIONE:</b> Mandataria  Mandanti  												
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>												
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">COMMESSA</td> <td style="width: 10%;">LOTTO</td> <td style="width: 15%;">CODIFICA</td> <td style="width: 15%;">DOCUMENTO</td> <td style="width: 10%;">REV.</td> <td style="width: 10%;">FOGLIO</td> </tr> <tr> <td>IF28</td> <td>01</td> <td>E ZZ CL</td> <td>VI0403 001</td> <td>B</td> <td>225 di 354</td> </tr> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF28	01	E ZZ CL	VI0403 001	B	225 di 354
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO							
IF28	01	E ZZ CL	VI0403 001	B	225 di 354							

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
48724.4	-4544.72	877.148
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-2550.97	10542.0	57457.9

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
1.50968E-03	-1.26609E-03	2.20550E-04
ANGLE ROT. X, RAD	ANGLE ROT. Y, RAD	ANGLE ROT. Z, RAD
-6.86554E-06	1.06990E-05	8.94682E-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	1.0021E-03	-1.2043E-03	1.7421E-04	-6.8655E-06	1.0699E-05	8.9468E-05
2	1.4047E-03	-1.2043E-03	2.0510E-04	-6.8655E-06	1.0699E-05	8.9468E-05
3	1.8073E-03	-1.2043E-03	2.3600E-04	-6.8655E-06	1.0699E-05	8.9468E-05
4	2.2099E-03	-1.2043E-03	2.6689E-04	-6.8655E-06	1.0699E-05	8.9468E-05
5	9.5392E-04	-1.2352E-03	1.7421E-04	-6.8655E-06	1.0699E-05	8.9468E-05
6	1.3565E-03	-1.2352E-03	2.0510E-04	-6.8655E-06	1.0699E-05	8.9468E-05
7	1.7591E-03	-1.2352E-03	2.3600E-04	-6.8655E-06	1.0699E-05	8.9468E-05
8	2.1617E-03	-1.2352E-03	2.6689E-04	-6.8655E-06	1.0699E-05	8.9468E-05
9	9.0577E-04	-1.2661E-03	1.7421E-04	-6.8655E-06	1.0699E-05	8.9468E-05
10	1.3084E-03	-1.2661E-03	2.0510E-04	-6.8655E-06	1.0699E-05	8.9468E-05
11	1.7110E-03	-1.2661E-03	2.3600E-04	-6.8655E-06	1.0699E-05	8.9468E-05
12	2.1136E-03	-1.2661E-03	2.6689E-04	-6.8655E-06	1.0699E-05	8.9468E-05
13	8.5763E-04	-1.2970E-03	1.7421E-04	-6.8655E-06	1.0699E-05	8.9468E-05
14	1.2602E-03	-1.2970E-03	2.0510E-04	-6.8655E-06	1.0699E-05	8.9468E-05
15	1.6628E-03	-1.2970E-03	2.3600E-04	-6.8655E-06	1.0699E-05	8.9468E-05
16	2.0654E-03	-1.2970E-03	2.6689E-04	-6.8655E-06	1.0699E-05	8.9468E-05
17	8.0948E-04	-1.3279E-03	1.7421E-04	-6.8655E-06	1.0699E-05	8.9468E-05
18	1.2121E-03	-1.3279E-03	2.0510E-04	-6.8655E-06	1.0699E-05	8.9468E-05
19	1.6147E-03	-1.3279E-03	2.3600E-04	-6.8655E-06	1.0699E-05	8.9468E-05
20	2.0173E-03	-1.3279E-03	2.6689E-04	-6.8655E-06	1.0699E-05	8.9468E-05
MINIMUM	8.0948E-04	-1.3279E-03	1.7421E-04	-6.8655E-06	1.0699E-05	8.9468E-05
Pile N.	17	17	1	1	1	1
MAXIMUM	2.2099E-03	-1.2043E-03	2.6689E-04	-6.8655E-06	1.0699E-05	8.9468E-05
Pile N.	4	1	4	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	1641.6	-214.19	32.620	-2.4077	-88.119	-552.71
2	2298.9	-204.89	38.122	-2.4077	-107.39	-534.77
3	2956.2	-212.26	46.556	-2.4077	-132.48	-549.40
4	3425.8	-269.91	67.433	-2.4077	-181.11	-657.12
5	1563.0	-198.48	29.308	-2.4077	-81.535	-530.07
6	2220.3	-189.54	34.246	-2.4077	-99.530	-512.18
7	2877.6	-197.53	42.109	-2.4077	-123.54	-528.60
8	3372.9	-265.27	64.317	-2.4077	-175.37	-658.48
9	1484.4	-204.41	29.227	-2.4077	-81.371	-550.07
10	2141.7	-195.24	34.155	-2.4077	-99.341	-531.68
11	2799.0	-203.47	42.005	-2.4077	-123.32	-548.64
12	3319.9	-273.52	64.273	-2.4077	-175.29	-683.17
13	1405.8	-211.12	29.259	-2.4077	-81.435	-571.66
14	2063.1	-201.57	34.174	-2.4077	-99.380	-552.49
15	2720.4	-210.16	42.050	-2.4077	-123.42	-570.19
16	3266.9	-281.92	64.261	-2.4077	-175.27	-708.12
17	1327.2	-240.18	32.262	-2.4077	-87.417	-637.59
18	1984.5	-229.54	37.656	-2.4077	-106.46	-616.88
19	2641.8	-238.01	46.051	-2.4077	-131.48	-633.82
20	3213.9	-303.53	67.065	-2.4077	-180.45	-757.14
MINIMUM	1327.2	-303.53	29.227	-2.4077	-181.11	-757.14
Pile N.	17	20	9	1	4	20
MAXIMUM	3425.8	-189.54	67.433	-2.4077	-81.371	-512.18
Pile N.	4	6	4	1	9	6

THE PILE COORDINATE SYSTEM (LOCAL AXES)

<b>APPALTATORE:</b> Consorzio  Soci  		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria  Mandanti  							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>							COMMESSA <b>IF28</b>

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	1.0021E-03	-1.2043E-03	1.7421E-04	-6.8655E-06	1.0699E-05	8.9468E-05
2	1.4047E-03	-1.2043E-03	2.0510E-04	-6.8655E-06	1.0699E-05	8.9468E-05
3	1.8073E-03	-1.2043E-03	2.3600E-04	-6.8655E-06	1.0699E-05	8.9468E-05
4	2.2099E-03	-1.2043E-03	2.6689E-04	-6.8655E-06	1.0699E-05	8.9468E-05
5	9.5392E-04	-1.2352E-03	1.7421E-04	-6.8655E-06	1.0699E-05	8.9468E-05
6	1.3565E-03	-1.2352E-03	2.0510E-04	-6.8655E-06	1.0699E-05	8.9468E-05
7	1.7591E-03	-1.2352E-03	2.3600E-04	-6.8655E-06	1.0699E-05	8.9468E-05
8	2.1617E-03	-1.2352E-03	2.6689E-04	-6.8655E-06	1.0699E-05	8.9468E-05
9	9.0577E-04	-1.2661E-03	1.7421E-04	-6.8655E-06	1.0699E-05	8.9468E-05
10	1.3084E-03	-1.2661E-03	2.0510E-04	-6.8655E-06	1.0699E-05	8.9468E-05
11	1.7110E-03	-1.2661E-03	2.3600E-04	-6.8655E-06	1.0699E-05	8.9468E-05
12	2.1136E-03	-1.2661E-03	2.6689E-04	-6.8655E-06	1.0699E-05	8.9468E-05
13	8.5763E-04	-1.2970E-03	1.7421E-04	-6.8655E-06	1.0699E-05	8.9468E-05
14	1.2602E-03	-1.2970E-03	2.0510E-04	-6.8655E-06	1.0699E-05	8.9468E-05
15	1.6628E-03	-1.2970E-03	2.3600E-04	-6.8655E-06	1.0699E-05	8.9468E-05
16	2.0654E-03	-1.2970E-03	2.6689E-04	-6.8655E-06	1.0699E-05	8.9468E-05
17	8.0948E-04	-1.3279E-03	1.7421E-04	-6.8655E-06	1.0699E-05	8.9468E-05
18	1.2121E-03	-1.3279E-03	2.0510E-04	-6.8655E-06	1.0699E-05	8.9468E-05
19	1.6147E-03	-1.3279E-03	2.3600E-04	-6.8655E-06	1.0699E-05	8.9468E-05
20	2.0173E-03	-1.3279E-03	2.6689E-04	-6.8655E-06	1.0699E-05	8.9468E-05
MINIMUM	8.0948E-04	-1.3279E-03	1.7421E-04	-6.8655E-06	1.0699E-05	8.9468E-05
Pile N.	17	17	1	1	1	1
MAXIMUM	2.2099E-03	-1.2043E-03	2.6689E-04	-6.8655E-06	1.0699E-05	8.9468E-05
Pile N.	4	1	4	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	1641.6	-214.19	32.620	-2.4077	-88.119	-552.71
2	2298.9	-204.89	38.122	-2.4077	-107.39	-534.77
3	2956.2	-212.26	46.556	-2.4077	-132.48	-549.40
4	3425.8	-269.91	67.433	-2.4077	-181.11	-657.12
5	1563.0	-198.48	29.308	-2.4077	-81.535	-530.07
6	2220.3	-189.54	34.246	-2.4077	-99.530	-512.18
7	2877.6	-197.53	42.109	-2.4077	-123.54	-528.60
8	3372.9	-265.27	64.317	-2.4077	-175.37	-658.48
9	1484.4	-204.41	29.227	-2.4077	-81.371	-550.07
10	2141.7	-195.24	34.155	-2.4077	-99.341	-531.68
11	2799.0	-203.47	42.005	-2.4077	-123.32	-548.64
12	3319.9	-273.52	64.273	-2.4077	-175.29	-683.17
13	1405.8	-211.12	29.259	-2.4077	-81.435	-571.66
14	2063.1	-201.57	34.174	-2.4077	-99.380	-552.49
15	2720.4	-210.16	42.050	-2.4077	-123.42	-570.19
16	3266.9	-281.92	64.261	-2.4077	-175.27	-708.12
17	1327.2	-240.18	32.262	-2.4077	-87.417	-637.59
18	1984.5	-229.54	37.656	-2.4077	-106.46	-616.88
19	2641.8	-238.01	46.051	-2.4077	-131.48	-633.82
20	3213.9	-303.53	67.065	-2.4077	-180.45	-757.14
MINIMUM	1327.2	-303.53	29.227	-2.4077	-181.11	-757.14
Pile N.	17	20	9	1	4	20
MAXIMUM	3425.8	-189.54	67.433	-2.4077	-81.371	-512.18
Pile N.	4	6	4	1	9	6

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

PILE GROUP	STRESS, KN/ M**2
*****	*****
1	2618.1
2	2947.1
3	3378.5
4	3995.8
5	2503.1
6	2831.1
7	3266.7
8	3965.3
9	2518.2
10	2844.4
11	3281.0
12	4007.3
13	2538.2
14	2861.7
15	3300.1
16	4050.3
17	2693.3
18	3012.3
19	3448.5
20	4167.8
MINIMUM	2503.1
Pile N.	5
MAXIMUM	4167.8
Pile N.	20



<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>				
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>					
<b>COMMESSA</b> <b>IF28</b>	<b>LOTTO</b> <b>01</b>	<b>CODIFICA</b> <b>E ZZ CL</b>	<b>DOCUMENTO</b> <b>VI0403 001</b>	<b>REV.</b> <b>B</b>	<b>FOGLIO</b> <b>228 di 354</b>

16	3.4341E-05	2.6689E-04	708.12	66.071	66.906	64.268	17.152	18.674	4050.3	7.8279E+06	7.8279E+06
x( M)	11.160	0.0000	0.0000	6.3000	8.8200	0.0000	11.700	5.0400	0.0000	0.0000	0.0000
17	3.7904E-05	1.7421E-04	637.59	37.861	56.868	32.264	14.679	9.2641	2693.3	7.8279E+06	7.8279E+06
x( M)	11.880	0.0000	0.0000	6.4800	9.1800	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
18	3.8576E-05	2.0510E-04	616.88	43.665	54.439	37.659	14.006	10.674	3012.3	7.8279E+06	7.8279E+06
x( M)	11.880	0.0000	0.0000	6.6600	9.3600	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
19	3.8089E-05	2.3600E-04	633.82	51.641	56.473	46.055	14.577	13.078	3448.5	7.8279E+06	7.8279E+06
x( M)	11.880	0.0000	0.0000	6.6600	9.3600	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
20	3.4587E-05	2.6689E-04	757.14	67.833	71.454	67.071	18.352	19.567	4167.8	7.8279E+06	7.8279E+06
x( M)	10.980	0.0000	0.0000	6.3000	8.8200	0.0000	11.520	5.0400	0.0000	0.0000	0.0000
Max.	3.8913E-05	2.6689E-04	757.14	68.034	71.454	67.440	18.352	19.662	4167.8	7.8279E+06	7.8279E+06
Pile N.	14	4	20	4	20	4	20	4	20	1	1

LOAD CASE : 8  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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	0.5864	1.0000
2	0.5462	1.0000
3	0.5805	1.0000
4	0.8661	1.0000
5	0.4960	1.0000
6	0.4617	1.0000
7	0.4951	1.0000
8	0.8043	1.0000
9	0.4947	1.0000
10	0.4606	1.0000
11	0.4939	1.0000
12	0.8041	1.0000
13	0.4958	1.0000
14	0.4615	1.0000
15	0.4949	1.0000
16	0.8041	1.0000
17	0.5845	1.0000
18	0.5442	1.0000
19	0.5787	1.0000
20	0.8648	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
45535.4	-7032.73	551.294
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-1501.35	5505.41	65864.9

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
1.41529E-03	-1.87577E-03	1.36538E-04
ANGLE ROT. X, RAD	ANGLE ROT. Y, RAD	ANGLE ROT. Z, RAD
-3.93126E-06	5.82612E-06	1.09397E-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	7.2929E-04	-1.8404E-03	1.1000E-04	-3.9313E-06	5.8261E-06	1.0940E-04
2	1.2216E-03	-1.8404E-03	1.2769E-04	-3.9313E-06	5.8261E-06	1.0940E-04
3	1.7139E-03	-1.8404E-03	1.4538E-04	-3.9313E-06	5.8261E-06	1.0940E-04
4	2.2062E-03	-1.8404E-03	1.6307E-04	-3.9313E-06	5.8261E-06	1.0940E-04
5	7.0307E-04	-1.8581E-03	1.1000E-04	-3.9313E-06	5.8261E-06	1.0940E-04
6	1.1954E-03	-1.8581E-03	1.2769E-04	-3.9313E-06	5.8261E-06	1.0940E-04
7	1.6876E-03	-1.8581E-03	1.4538E-04	-3.9313E-06	5.8261E-06	1.0940E-04
8	2.1799E-03	-1.8581E-03	1.6307E-04	-3.9313E-06	5.8261E-06	1.0940E-04
9	6.7685E-04	-1.8758E-03	1.1000E-04	-3.9313E-06	5.8261E-06	1.0940E-04
10	1.1691E-03	-1.8758E-03	1.2769E-04	-3.9313E-06	5.8261E-06	1.0940E-04

APPALTATORE:

Consorzio

Soci



ITINERARIO NAPOLI – BARI

PROGETTAZIONE:

Mandataria

Mandanti



RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

PROGETTO ESECUTIVO

RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 229 di 354
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11	1.6614E-03	-1.8758E-03	1.4538E-04	-3.9313E-06	5.8261E-06	1.0940E-04
12	2.1537E-03	-1.8758E-03	1.6307E-04	-3.9313E-06	5.8261E-06	1.0940E-04
13	6.5064E-04	-1.8935E-03	1.1000E-04	-3.9313E-06	5.8261E-06	1.0940E-04
14	1.1429E-03	-1.8935E-03	1.2769E-04	-3.9313E-06	5.8261E-06	1.0940E-04
15	1.6352E-03	-1.8935E-03	1.4538E-04	-3.9313E-06	5.8261E-06	1.0940E-04
16	2.1275E-03	-1.8935E-03	1.6307E-04	-3.9313E-06	5.8261E-06	1.0940E-04
17	6.2442E-04	-1.9111E-03	1.1000E-04	-3.9313E-06	5.8261E-06	1.0940E-04
18	1.1167E-03	-1.9111E-03	1.2769E-04	-3.9313E-06	5.8261E-06	1.0940E-04
19	1.6090E-03	-1.9111E-03	1.4538E-04	-3.9313E-06	5.8261E-06	1.0940E-04
20	2.1013E-03	-1.9111E-03	1.6307E-04	-3.9313E-06	5.8261E-06	1.0940E-04

MINIMUM	6.2442E-04	-1.9111E-03	1.1000E-04	-3.9313E-06	5.8261E-06	1.0940E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	2.2062E-03	-1.8404E-03	1.6307E-04	-3.9313E-06	5.8261E-06	1.0940E-04
Pile N.	4	1	4	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	1196.3	-342.58	20.992	-1.3787	-58.503	-935.49
2	2000.0	-328.05	24.007	-1.3787	-69.263	-907.13
3	2803.7	-340.14	28.901	-1.3787	-83.781	-931.47
4	3421.7	-433.16	41.602	-1.3787	-113.15	-1107.4
5	1153.4	-313.40	18.997	-1.3787	-54.502	-881.87
6	1957.2	-300.03	21.744	-1.3787	-64.639	-854.89
7	2760.9	-312.70	26.330	-1.3787	-78.580	-881.24
8	3392.9	-418.96	39.831	-1.3787	-109.87	-1087.0
9	1110.6	-316.56	18.966	-1.3787	-54.438	-892.87
10	1914.4	-303.08	21.709	-1.3787	-64.566	-865.62
11	2718.1	-315.87	26.288	-1.3787	-78.495	-892.26
12	3364.0	-423.69	39.821	-1.3787	-109.86	-1101.1
13	1067.8	-320.61	18.987	-1.3787	-54.481	-905.66
14	1871.5	-306.97	21.733	-1.3787	-64.616	-878.09
15	2675.3	-319.91	26.317	-1.3787	-78.554	-905.04
16	3335.2	-428.45	39.815	-1.3787	-109.85	-1115.4
17	1025.0	-357.90	20.940	-1.3787	-58.401	-984.99
18	1828.7	-342.69	23.942	-1.3787	-69.135	-955.22
19	2632.5	-355.36	28.830	-1.3787	-83.643	-980.78
20	3306.3	-452.63	41.541	-1.3787	-113.04	-1165.1
MINIMUM	1025.0	-452.63	18.966	-1.3787	-113.15	-1165.1
Pile N.	17	20	9	1	4	20
MAXIMUM	3421.7	-300.03	41.602	-1.3787	-54.438	-854.89
Pile N.	4	6	4	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	7.2929E-04	-1.8404E-03	1.1000E-04	-3.9313E-06	5.8261E-06	1.0940E-04
2	1.2216E-03	-1.8404E-03	1.2769E-04	-3.9313E-06	5.8261E-06	1.0940E-04
3	1.7139E-03	-1.8404E-03	1.4538E-04	-3.9313E-06	5.8261E-06	1.0940E-04
4	2.2062E-03	-1.8404E-03	1.6307E-04	-3.9313E-06	5.8261E-06	1.0940E-04
5	7.0307E-04	-1.8581E-03	1.1000E-04	-3.9313E-06	5.8261E-06	1.0940E-04
6	1.1954E-03	-1.8581E-03	1.2769E-04	-3.9313E-06	5.8261E-06	1.0940E-04
7	1.6876E-03	-1.8581E-03	1.4538E-04	-3.9313E-06	5.8261E-06	1.0940E-04
8	2.1799E-03	-1.8581E-03	1.6307E-04	-3.9313E-06	5.8261E-06	1.0940E-04
9	6.7685E-04	-1.8758E-03	1.1000E-04	-3.9313E-06	5.8261E-06	1.0940E-04
10	1.1691E-03	-1.8758E-03	1.2769E-04	-3.9313E-06	5.8261E-06	1.0940E-04
11	1.6614E-03	-1.8758E-03	1.4538E-04	-3.9313E-06	5.8261E-06	1.0940E-04
12	2.1537E-03	-1.8758E-03	1.6307E-04	-3.9313E-06	5.8261E-06	1.0940E-04
13	6.5064E-04	-1.8935E-03	1.1000E-04	-3.9313E-06	5.8261E-06	1.0940E-04
14	1.1429E-03	-1.8935E-03	1.2769E-04	-3.9313E-06	5.8261E-06	1.0940E-04
15	1.6352E-03	-1.8935E-03	1.4538E-04	-3.9313E-06	5.8261E-06	1.0940E-04
16	2.1275E-03	-1.8935E-03	1.6307E-04	-3.9313E-06	5.8261E-06	1.0940E-04
17	6.2442E-04	-1.9111E-03	1.1000E-04	-3.9313E-06	5.8261E-06	1.0940E-04
18	1.1167E-03	-1.9111E-03	1.2769E-04	-3.9313E-06	5.8261E-06	1.0940E-04
19	1.6090E-03	-1.9111E-03	1.4538E-04	-3.9313E-06	5.8261E-06	1.0940E-04
20	2.1013E-03	-1.9111E-03	1.6307E-04	-3.9313E-06	5.8261E-06	1.0940E-04
MINIMUM	6.2442E-04	-1.9111E-03	1.1000E-04	-3.9313E-06	5.8261E-06	1.0940E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	2.2062E-03	-1.8404E-03	1.6307E-04	-3.9313E-06	5.8261E-06	1.0940E-04
Pile N.	4	1	4	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	1196.3	-342.58	20.992	-1.3787	-58.503	-935.49
2	2000.0	-328.05	24.007	-1.3787	-69.263	-907.13
3	2803.7	-340.14	28.901	-1.3787	-83.781	-931.47
4	3421.7	-433.16	41.602	-1.3787	-113.15	-1107.4

APPALTATORE:

Consorzio

Soci



ITINERARIO NAPOLI – BARI

PROGETTAZIONE:

Mandataria

Mandanti



RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

PROGETTO ESECUTIVO

RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

COMMESSA LOTTO CODIFICA DOCUMENTO REV. FOGLIO  
IF28 01 E ZZ CL VI0403 001 B 230 di 354

5	1153.4	-313.40	18.997	-1.3787	-54.502	-881.87
6	1957.2	-300.03	21.744	-1.3787	-64.639	-854.89
7	2760.9	-312.70	26.330	-1.3787	-78.580	-881.24
8	3392.9	-418.96	39.831	-1.3787	-109.87	-1087.0
9	1110.6	-316.56	18.966	-1.3787	-54.438	-892.87
10	1914.4	-303.08	21.709	-1.3787	-64.566	-865.62
11	2718.1	-315.87	26.288	-1.3787	-78.495	-892.26
12	3364.0	-423.69	39.821	-1.3787	-109.86	-1101.1
13	1067.8	-320.61	18.987	-1.3787	-54.481	-905.66
14	1871.5	-306.97	21.733	-1.3787	-64.616	-878.09
15	2675.3	-319.91	26.317	-1.3787	-78.554	-905.04
16	3335.2	-428.45	39.815	-1.3787	-109.85	-1115.4
17	1025.0	-357.90	20.940	-1.3787	-58.401	-984.99
18	1828.7	-342.69	23.942	-1.3787	-69.135	-955.22
19	2632.5	-355.36	28.830	-1.3787	-83.643	-980.78
20	3306.3	-452.63	41.541	-1.3787	-113.04	-1165.1
MINIMUM	1025.0	-452.63	18.966	-1.3787	-113.15	-1165.1
Pile N.	17	20	9	1	4	20
MAXIMUM	3421.7	-300.03	41.602	-1.3787	-54.438	-854.89
Pile N.	4	6	4	1	9	6




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

*****	*****
1	3505.8
2	3877.5
3	4409.1
4	5295.9
5	3319.3
6	3695.0
7	4232.5
8	5217.2
9	3328.2
10	3703.1
11	4241.4
12	5243.4
13	3342.5
14	3716.4
15	4255.6
16	5269.8
17	3558.0
18	3925.3
19	4460.5
20	5404.0
MINIMUM	3319.3
Pile N.	5
MAXIMUM	5404.0
Pile N.	20

\* 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	-1.8404E-03	-3.1825E-06	-400.76	-58.503	-342.59	-4.7737	-98.828	-1.2426	676.94	7.8279E+06	7.8279E+06
x(M)	0.0000	11.880	6.4800	0.0000	0.0000	9.3600	5.0400	12.240	18.000	0.0000	0.0000
2	-1.8404E-03	-3.7853E-06	-390.36	-69.263	-328.07	-5.3405	-94.066	-1.3882	1131.7	7.8279E+06	7.8279E+06
x(M)	0.0000	12.060	6.6600	0.0000	0.0000	9.5400	5.0400	12.240	18.000	0.0000	0.0000
3	-1.8404E-03	-4.2779E-06	-399.41	-83.781	-340.17	-6.3489	-98.115	-1.6625	1586.5	7.8279E+06	7.8279E+06
x(M)	0.0000	12.060	6.4800	0.0000	0.0000	9.3600	5.0400	12.240	18.000	0.0000	0.0000
4	-1.8404E-03	-4.3736E-06	-461.88	-113.15	-433.20	-9.0786	-127.96	-2.3687	1936.3	7.8279E+06	7.8279E+06
x(M)	0.0000	11.160	6.1200	0.0000	0.0000	8.8200	5.0400	11.520	18.000	0.0000	0.0000
5	-1.8581E-03	-3.2983E-06	-380.50	-54.502	-313.41	-4.3037	-88.934	-1.1013	652.72	7.8279E+06	7.8279E+06
x(M)	0.0000	12.240	6.6600	0.0000	0.0000	9.5400	5.0400	12.240	18.000	0.0000	0.0000
6	-1.8581E-03	-3.9103E-06	-370.41	-64.639	-300.05	-4.8093	-84.501	-1.2125	1107.5	7.8279E+06	7.8279E+06
x(M)	0.0000	12.420	6.8400	0.0000	0.0000	9.7200	5.0400	12.240	18.000	0.0000	0.0000
7	-1.8581E-03	-4.4244E-06	-380.40	-78.580	-312.72	-5.7513	-88.794	-1.4747	1562.3	7.8279E+06	7.8279E+06
x(M)	0.0000	12.240	6.6600	0.0000	0.0000	9.7200	5.0400	12.240	18.000	0.0000	0.0000
8	-1.8581E-03	-4.4550E-06	-454.26	-109.87	-419.01	-8.6997	-123.41	-2.2728	1920.0	7.8279E+06	7.8279E+06
x(M)	0.0000	11.340	6.3000	0.0000	0.0000	9.0000	5.0400	11.700	18.000	0.0000	0.0000
9	-1.8758E-03	-3.2998E-06	-383.88	-54.438	-316.58	-4.2965	-89.785	-1.0990	628.50	7.8279E+06	7.8279E+06
x(M)	0.0000	12.240	6.6600	0.0000	0.0000	9.5400	5.0400	12.240	18.000	0.0000	0.0000
10	-1.8758E-03	-3.9118E-06	-373.75	-64.566	-303.10	-4.8013	-85.310	-1.2097	1083.3	7.8279E+06	7.8279E+06
x(M)	0.0000	12.420	6.8400	0.0000	0.0000	9.7200	5.0400	12.240	18.000	0.0000	0.0000
11	-1.8758E-03	-4.4259E-06	-383.79	-78.495	-315.90	-5.7423	-89.649	-1.4715	1538.1	7.8279E+06	7.8279E+06
x(M)	0.0000	12.240	6.6600	0.0000	0.0000	9.7200	5.0400	12.240	18.000	0.0000	0.0000
12	-1.8758E-03	-4.4551E-06	-458.75	-109.86	-423.73	-8.6986	-124.80	-2.2726	1903.7	7.8279E+06	7.8279E+06
x(M)	0.0000	11.340	6.3000	0.0000	0.0000	9.0000	5.0400	11.700	18.000	0.0000	0.0000
13	-1.8935E-03	-3.2982E-06	-387.93	-54.481	-320.62	-4.3020	-90.931	-1.1008	604.28	7.8279E+06	7.8279E+06
x(M)	0.0000	12.240	6.6600	0.0000	0.0000	9.5400	5.0400	12.240	18.000	0.0000	0.0000
14	-1.8935E-03	-3.9101E-06	-377.70	-64.616	-306.99	-4.8075	-86.401	-1.2119	1059.1	7.8279E+06	7.8279E+06
x(M)	0.0000	12.420	6.8400	0.0000	0.0000	9.7200	5.0400	12.240	18.000	0.0000	0.0000
15	-1.8935E-03	-4.4241E-06	-387.84	-78.554	-319.94	-5.7494	-90.794	-1.4740	1513.9	7.8279E+06	7.8279E+06
x(M)	0.0000	12.240	6.6600	0.0000	0.0000	9.7200	5.0400	12.240	18.000	0.0000	0.0000

APPALTATORE: Consorzio <u>Soci</u>   			<h2 style="margin: 0;">ITINERARIO NAPOLI – BARI</h2> <h3 style="margin: 0;">RADDOPPIO TRATTA APICE – ORSARA</h3> <h4 style="margin: 0;">I LOTTO FUNZIONALE APICE – HIRPINIA</h4>					
PROGETTAZIONE: <u>Mandatario</u> <u>Mandanti</u>   								
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B								

16	-1.8935E-03	-4.4549E-06	-463.27	-109.85	-428.50	-8.6983	-126.20	-2.2725	1887.3	7.8279E+06	7.8279E+06
x( M)	0.0000	11.340	6.3000	0.0000	0.0000	9.0000	5.0400	11.700	18.000	0.0000	0.0000
17	-1.9112E-03	-3.1841E-06	-416.21	-58.401	-357.91	-4.7636	-103.15	-1.2399	580.05	7.8279E+06	7.8279E+06
x( M)	0.0000	11.880	6.4800	0.0000	0.0000	9.3600	5.0400	12.240	18.000	0.0000	0.0000
18	-1.9112E-03	-3.7873E-06	-405.47	-69.135	-342.71	-5.3278	-98.150	-1.3844	1034.9	7.8279E+06	7.8279E+06
x( M)	0.0000	12.060	6.6600	0.0000	0.0000	9.5400	5.0400	12.240	18.000	0.0000	0.0000
19	-1.9112E-03	-4.2806E-06	-414.79	-83.643	-355.39	-6.3348	-102.41	-1.6586	1489.7	7.8279E+06	7.8279E+06
x( M)	0.0000	12.060	6.4800	0.0000	0.0000	9.3600	5.0400	12.240	18.000	0.0000	0.0000
20	-1.9112E-03	-4.3746E-06	-480.06	-113.04	-452.67	-9.0696	-133.71	-2.3665	1871.0	7.8279E+06	7.8279E+06
x( M)	0.0000	11.160	6.1200	0.0000	0.0000	8.8200	5.0400	11.520	18.000	0.0000	0.0000
Min.	-1.9112E-03	-4.4551E-06	-480.06	-113.15	-452.67	-9.0786	-133.71	-2.3687	580.05	7.8279E+06	7.8279E+06
Pile N.	17	12	20	4	20	4	20	4	17	1	1


\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	5.2898E-05	1.1000E-04	935.49	24.052	79.426	20.993	20.607	6.0297	3505.8	7.8279E+06	7.8279E+06
x( M)	11.880	0.0000	0.0000	6.4800	9.3600	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
2	5.3785E-05	1.2769E-04	907.13	27.364	76.122	24.008	19.676	6.8168	3877.5	7.8279E+06	7.8279E+06
x( M)	12.060	0.0000	0.0000	6.6600	9.3600	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
3	5.3120E-05	1.4538E-04	931.47	32.014	79.080	28.904	20.508	8.2325	4409.1	7.8279E+06	7.8279E+06
x( M)	11.880	0.0000	0.0000	6.6600	9.3600	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
4	4.8175E-05	1.6307E-04	1107.4	41.712	100.22	41.606	25.850	12.186	5295.9	7.8279E+06	7.8279E+06
x( M)	10.980	0.0000	0.0000	6.3000	8.8200	0.0000	11.520	5.0400	0.0000	0.0000	0.0000
5	5.5389E-05	1.1000E-04	881.87	22.610	72.378	18.998	18.495	5.3656	3319.3	7.8279E+06	7.8279E+06
x( M)	12.240	0.0000	0.0000	6.6600	9.5400	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
6	5.6171E-05	1.2769E-04	854.89	25.705	69.236	21.746	17.460	6.0566	3695.0	7.8279E+06	7.8279E+06
x( M)	12.240	0.0000	0.0000	6.8400	9.7200	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
7	5.5518E-05	1.4538E-04	881.24	30.174	72.426	26.332	18.504	7.3696	4232.5	7.8279E+06	7.8279E+06
x( M)	12.240	0.0000	0.0000	6.8400	9.5400	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
8	4.9566E-05	1.6307E-04	1087.0	40.598	97.015	39.835	25.041	11.623	5217.2	7.8279E+06	7.8279E+06
x( M)	11.160	0.0000	0.0000	6.3000	8.8200	0.0000	11.700	5.0400	0.0000	0.0000	0.0000
9	5.5974E-05	1.1000E-04	892.87	22.588	72.977	18.967	18.643	5.3562	3328.2	7.8279E+06	7.8279E+06
x( M)	12.240	0.0000	0.0000	6.6600	9.5400	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
10	5.6753E-05	1.2769E-04	865.62	25.681	69.816	21.711	17.595	6.0461	3703.1	7.8279E+06	7.8279E+06
x( M)	12.420	0.0000	0.0000	6.8400	9.7200	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
11	5.6103E-05	1.4538E-04	892.26	30.146	73.029	26.291	18.653	7.3572	4241.4	7.8279E+06	7.8279E+06
x( M)	12.240	0.0000	0.0000	6.8400	9.5400	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
12	5.0063E-05	1.6307E-04	1101.1	40.594	97.970	39.825	25.298	11.622	5243.4	7.8279E+06	7.8279E+06
x( M)	11.160	0.0000	0.0000	6.3000	8.8200	0.0000	11.700	5.0400	0.0000	0.0000	0.0000
13	5.6504E-05	1.1000E-04	905.66	22.605	73.788	18.988	18.859	5.3645	3342.5	7.8279E+06	7.8279E+06
x( M)	12.240	0.0000	0.0000	6.6600	9.5400	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
14	5.7291E-05	1.2769E-04	878.09	25.700	70.592	21.734	17.800	6.0555	3716.4	7.8279E+06	7.8279E+06
x( M)	12.420	0.0000	0.0000	6.8400	9.7200	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
15	5.6634E-05	1.4538E-04	905.04	30.169	73.841	26.319	18.870	7.3685	4255.6	7.8279E+06	7.8279E+06
x( M)	12.240	0.0000	0.0000	6.8400	9.5400	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
16	5.0559E-05	1.6307E-04	1115.4	40.594	98.935	39.819	25.556	11.623	5269.8	7.8279E+06	7.8279E+06
x( M)	11.160	0.0000	0.0000	6.3000	8.8200	0.0000	11.700	5.0400	0.0000	0.0000	0.0000
17	5.5084E-05	1.1000E-04	984.99	24.021	82.462	20.941	21.417	6.0180	3558.0	7.8279E+06	7.8279E+06
x( M)	11.880	0.0000	0.0000	6.4800	9.3600	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
18	5.6016E-05	1.2769E-04	955.22	27.325	78.978	23.943	20.433	6.8013	3925.3	7.8279E+06	7.8279E+06
x( M)	12.060	0.0000	0.0000	6.6600	9.3600	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
19	5.5311E-05	1.4538E-04	980.78	31.973	82.099	28.833	21.313	8.2164	4460.5	7.8279E+06	7.8279E+06
x( M)	11.880	0.0000	0.0000	6.6600	9.3600	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
20	5.0129E-05	1.6307E-04	1165.1	41.688	104.19	41.545	26.905	12.178	5404.0	7.8279E+06	7.8279E+06
x( M)	10.980	0.0000	0.0000	6.3000	8.8200	0.0000	11.520	5.0400	0.0000	0.0000	0.0000
Max.	5.7291E-05	1.6307E-04	1165.1	41.712	104.19	41.606	26.905	12.186	5404.0	7.8279E+06	7.8279E+06
Pile N.	14	4	20	4	20	4	20	4	20	1	1

LOAD CASE : 9  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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	0.5898	1.0000
2	0.5493	1.0000
3	0.5832	1.0000
4	0.8661	1.0000
5	0.4969	1.0000
6	0.4621	1.0000
7	0.4951	1.0000
8	0.8023	1.0000
9	0.4953	1.0000
10	0.4606	1.0000
11	0.4936	1.0000
12	0.8020	1.0000
13	0.4963	1.0000

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	

14	0.4615	1.0000
15	0.4946	1.0000
16	0.8020	1.0000
17	0.5845	1.0000
18	0.5437	1.0000
19	0.5779	1.0000
20	0.8625	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN 43281.8	HOR. LOAD Y, KN -5422.16	HOR. LOAD Z, KN 716.464
MOMENT X, KN- M -1787.78	MOMENT Y, KN- M 7579.56	MOMENT Z, KN- M 50903.9

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL, M 1.32419E-03	HORIZONTAL Y, M -1.42847E-03	HORIZONTAL Z, M 1.77269E-04
ANGLE ROT. X, RAD -4.63536E-06	ANGLE ROT. Y, RAD 7.62713E-06	ANGLE ROT. Z, RAD 8.01740E-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	8.5166E-04	-1.3868E-03	1.4598E-04	-4.6354E-06	7.6271E-06	8.0174E-05
2	1.2124E-03	-1.3868E-03	1.6684E-04	-4.6354E-06	7.6271E-06	8.0174E-05
3	1.5732E-03	-1.3868E-03	1.8770E-04	-4.6354E-06	7.6271E-06	8.0174E-05
4	1.9340E-03	-1.3868E-03	2.0856E-04	-4.6354E-06	7.6271E-06	8.0174E-05
5	8.1733E-04	-1.4076E-03	1.4598E-04	-4.6354E-06	7.6271E-06	8.0174E-05
6	1.1781E-03	-1.4076E-03	1.6684E-04	-4.6354E-06	7.6271E-06	8.0174E-05
7	1.5389E-03	-1.4076E-03	1.8770E-04	-4.6354E-06	7.6271E-06	8.0174E-05
8	1.8997E-03	-1.4076E-03	2.0856E-04	-4.6354E-06	7.6271E-06	8.0174E-05
9	7.8301E-04	-1.4285E-03	1.4598E-04	-4.6354E-06	7.6271E-06	8.0174E-05
10	1.1438E-03	-1.4285E-03	1.6684E-04	-4.6354E-06	7.6271E-06	8.0174E-05
11	1.5046E-03	-1.4285E-03	1.8770E-04	-4.6354E-06	7.6271E-06	8.0174E-05
12	1.8654E-03	-1.4285E-03	2.0856E-04	-4.6354E-06	7.6271E-06	8.0174E-05
13	7.4869E-04	-1.4493E-03	1.4598E-04	-4.6354E-06	7.6271E-06	8.0174E-05
14	1.1095E-03	-1.4493E-03	1.6684E-04	-4.6354E-06	7.6271E-06	8.0174E-05
15	1.4703E-03	-1.4493E-03	1.8770E-04	-4.6354E-06	7.6271E-06	8.0174E-05
16	1.8310E-03	-1.4493E-03	2.0856E-04	-4.6354E-06	7.6271E-06	8.0174E-05
17	7.1437E-04	-1.4702E-03	1.4598E-04	-4.6354E-06	7.6271E-06	8.0174E-05
18	1.0751E-03	-1.4702E-03	1.6684E-04	-4.6354E-06	7.6271E-06	8.0174E-05
19	1.4359E-03	-1.4702E-03	1.8770E-04	-4.6354E-06	7.6271E-06	8.0174E-05
20	1.7967E-03	-1.4702E-03	2.0856E-04	-4.6354E-06	7.6271E-06	8.0174E-05
MINIMUM	7.1437E-04	-1.4702E-03	1.4598E-04	-4.6354E-06	7.6271E-06	8.0174E-05
Pile N.	17	17	1	1	1	1
MAXIMUM	1.9340E-03	-1.3868E-03	2.0856E-04	-4.6354E-06	7.6271E-06	8.0174E-05
Pile N.	4	1	4	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	1396.0	-261.71	28.141	-1.6256	-78.387	-716.58
2	1985.0	-250.68	31.590	-1.6256	-90.861	-695.00
3	2574.1	-259.73	37.489	-1.6256	-108.22	-713.11
4	3122.2	-329.49	53.247	-1.6256	-144.28	-844.87
5	1340.0	-240.35	25.396	-1.6256	-72.892	-679.47
6	1929.0	-230.01	28.512	-1.6256	-84.585	-658.54
7	2518.0	-239.62	34.044	-1.6256	-101.26	-678.44
8	3084.5	-320.29	50.905	-1.6256	-139.95	-834.55
9	1284.0	-244.21	25.343	-1.6256	-72.784	-692.69
10	1873.0	-233.73	28.454	-1.6256	-84.466	-671.44
11	2462.0	-243.50	33.978	-1.6256	-101.13	-691.70
12	3046.7	-325.87	50.885	-1.6256	-139.92	-851.23
13	1227.9	-248.85	25.371	-1.6256	-72.841	-707.50
14	1816.9	-238.19	28.486	-1.6256	-84.531	-685.86
15	2405.9	-248.14	34.016	-1.6256	-101.21	-706.49
16	2995.0	-331.53	50.878	-1.6256	-139.91	-868.07
17	1171.9	-279.34	27.978	-1.6256	-78.066	-774.02
18	1760.9	-267.43	31.386	-1.6256	-90.453	-750.62



<b>APPALTATORE:</b> Consorzio <b>Soci</b>   				<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   									
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>									
				COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO
				IF28	01	E ZZ CL	VI0403 001	B	233 di 354

19	2349.9	-277.22	37.274	-1.6256	-107.79	-770.29
20	2938.9	-352.26	53.090	-1.6256	-143.99	-912.51
MINIMUM	1171.9	-352.26	25.343	-1.6256	-144.28	-912.51
Pile N.	17	20	9	1	4	20
MAXIMUM	3122.2	-230.01	53.247	-1.6256	-72.784	-658.54
Pile N.	4	6	4	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	8.5166E-04	-1.3868E-03	1.4598E-04	-4.6354E-06	7.6271E-06	8.0174E-05
2	1.2124E-03	-1.3868E-03	1.6684E-04	-4.6354E-06	7.6271E-06	8.0174E-05
3	1.5732E-03	-1.3868E-03	1.8770E-04	-4.6354E-06	7.6271E-06	8.0174E-05
4	1.9340E-03	-1.3868E-03	2.0856E-04	-4.6354E-06	7.6271E-06	8.0174E-05
5	8.1733E-04	-1.4076E-03	1.4598E-04	-4.6354E-06	7.6271E-06	8.0174E-05
6	1.1781E-03	-1.4076E-03	1.6684E-04	-4.6354E-06	7.6271E-06	8.0174E-05
7	1.5389E-03	-1.4076E-03	1.8770E-04	-4.6354E-06	7.6271E-06	8.0174E-05
8	1.8997E-03	-1.4076E-03	2.0856E-04	-4.6354E-06	7.6271E-06	8.0174E-05
9	7.8301E-04	-1.4285E-03	1.4598E-04	-4.6354E-06	7.6271E-06	8.0174E-05
10	1.1438E-03	-1.4285E-03	1.6684E-04	-4.6354E-06	7.6271E-06	8.0174E-05
11	1.5046E-03	-1.4285E-03	1.8770E-04	-4.6354E-06	7.6271E-06	8.0174E-05
12	1.8654E-03	-1.4285E-03	2.0856E-04	-4.6354E-06	7.6271E-06	8.0174E-05
13	7.4869E-04	-1.4493E-03	1.4598E-04	-4.6354E-06	7.6271E-06	8.0174E-05
14	1.1095E-03	-1.4493E-03	1.6684E-04	-4.6354E-06	7.6271E-06	8.0174E-05
15	1.4703E-03	-1.4493E-03	1.8770E-04	-4.6354E-06	7.6271E-06	8.0174E-05
16	1.8310E-03	-1.4493E-03	2.0856E-04	-4.6354E-06	7.6271E-06	8.0174E-05
17	7.1437E-04	-1.4702E-03	1.4598E-04	-4.6354E-06	7.6271E-06	8.0174E-05
18	1.0751E-03	-1.4702E-03	1.6684E-04	-4.6354E-06	7.6271E-06	8.0174E-05
19	1.4359E-03	-1.4702E-03	1.8770E-04	-4.6354E-06	7.6271E-06	8.0174E-05
20	1.7967E-03	-1.4702E-03	2.0856E-04	-4.6354E-06	7.6271E-06	8.0174E-05
MINIMUM	7.1437E-04	-1.4702E-03	1.4598E-04	-4.6354E-06	7.6271E-06	8.0174E-05
Pile N.	17	17	1	1	1	1
MAXIMUM	1.9340E-03	-1.3868E-03	2.0856E-04	-4.6354E-06	7.6271E-06	8.0174E-05
Pile N.	4	1	4	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	1396.0	-261.71	28.141	-1.6256	-78.387	-716.58
2	1985.0	-250.68	31.590	-1.6256	-90.861	-695.00
3	2574.1	-259.73	37.489	-1.6256	-108.22	-713.11
4	3122.2	-329.49	53.247	-1.6256	-144.28	-844.87
5	1340.0	-240.35	25.396	-1.6256	-72.892	-679.47
6	1929.0	-230.01	28.512	-1.6256	-84.585	-658.54
7	2518.0	-239.62	34.044	-1.6256	-101.26	-678.44
8	3084.5	-320.29	50.905	-1.6256	-139.95	-834.55
9	1284.0	-244.21	25.343	-1.6256	-72.784	-692.69
10	1873.0	-233.73	28.454	-1.6256	-84.466	-671.44
11	2462.0	-243.50	33.978	-1.6256	-101.13	-691.70
12	3046.7	-325.87	50.885	-1.6256	-139.92	-851.23
13	1227.9	-248.85	25.371	-1.6256	-72.841	-707.50
14	1816.9	-238.19	28.486	-1.6256	-84.531	-685.86
15	2405.9	-248.14	34.016	-1.6256	-101.21	-706.49
16	2995.0	-331.53	50.878	-1.6256	-139.91	-868.07
17	1171.9	-279.34	27.978	-1.6256	-78.066	-774.02
18	1760.9	-267.43	31.386	-1.6256	-90.453	-750.62
19	2349.9	-277.22	37.274	-1.6256	-107.79	-770.29
20	2938.9	-352.26	53.090	-1.6256	-143.99	-912.51
MINIMUM	1171.9	-352.26	25.343	-1.6256	-144.28	-912.51
Pile N.	17	20	9	1	4	20
MAXIMUM	3122.2	-230.01	53.247	-1.6256	-72.784	-658.54
Pile N.	4	6	4	1	9	6

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

PILE GROUP	STRESS, KN/ M**2
*****	*****
1	2965.6
2	3238.7
3	3633.5
4	4353.6
5	2820.7
6	3095.4
7	3495.1
8	4299.3
9	2828.7
10	3102.3
11	3503.0
12	4327.6
13	2841.4
14	3113.8



<b>APPALTATORE:</b> Consorzio <span style="float: right;">Soci</span>   		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <span style="float: right;">Mandanti</span>   							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>		COMMESSA <b>IF28</b>	LOTTO <b>01</b>	CODIFICA <b>E ZZ CL</b>	DOCUMENTO <b>VI0403 001</b>	REV. <b>B</b>	FOGLIO <b>235 di 354</b>

10	4.3316E-05	1.6684E-04	671.44	33.559	53.270	28.456	13.425	7.8913	3102.3	7.8279E+06	7.8279E+06
x( M)	12.420	0.0000	0.0000	6.8400	9.7200	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
11	4.2814E-05	1.8770E-04	691.70	38.899	55.680	33.981	14.226	9.4707	3503.0	7.8279E+06	7.8279E+06
x( M)	12.240	0.0000	0.0000	6.8400	9.5400	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
12	3.8219E-05	2.0856E-04	851.23	51.839	74.616	50.890	19.291	14.787	4327.6	7.8279E+06	7.8279E+06
x( M)	11.160	0.0000	0.0000	6.3000	8.8200	0.0000	11.700	5.0400	0.0000	0.0000	0.0000
13	4.3360E-05	1.4598E-04	707.50	30.034	56.643	25.372	14.487	7.1342	2841.4	7.8279E+06	7.8279E+06
x( M)	12.240	0.0000	0.0000	6.6600	9.5400	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
14	4.3962E-05	1.6684E-04	685.86	33.584	54.149	28.488	13.653	7.9035	3113.8	7.8279E+06	7.8279E+06
x( M)	12.420	0.0000	0.0000	6.8400	9.7200	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
15	4.3452E-05	1.8770E-04	706.49	38.928	56.597	34.019	14.468	9.4852	3515.5	7.8279E+06	7.8279E+06
x( M)	12.240	0.0000	0.0000	6.8400	9.5400	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
16	3.8803E-05	2.0856E-04	868.07	51.838	75.751	50.883	19.596	14.788	4348.5	7.8279E+06	7.8279E+06
x( M)	11.160	0.0000	0.0000	6.3000	8.8200	0.0000	11.700	5.0400	0.0000	0.0000	0.0000
17	4.2504E-05	1.4598E-04	774.02	31.906	63.609	27.979	16.538	7.9950	3011.0	7.8279E+06	7.8279E+06
x( M)	11.880	0.0000	0.0000	6.4800	9.3600	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
18	4.3224E-05	1.6684E-04	750.62	35.699	60.857	31.388	15.760	8.8689	3278.3	7.8279E+06	7.8279E+06
x( M)	12.060	0.0000	0.0000	6.6600	9.3600	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
19	4.2669E-05	1.8770E-04	770.29	41.251	63.247	37.277	16.436	10.569	3677.2	7.8279E+06	7.8279E+06
x( M)	11.880	0.0000	0.0000	6.6600	9.3600	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
20	3.8686E-05	2.0856E-04	912.51	53.232	80.219	53.095	20.737	15.494	4451.2	7.8279E+06	7.8279E+06
x( M)	11.160	0.0000	0.0000	6.3000	8.8200	0.0000	11.520	5.0400	0.0000	0.0000	0.0000
Max.	4.3962E-05	2.0856E-04	912.51	53.315	80.219	53.253	20.737	15.532	4451.2	7.8279E+06	7.8279E+06
Pile N.	14	4	20	4	20	4	20	4	20	1	1

LOAD CASE : 10  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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	0.5865	1.0000
2	0.5462	1.0000
3	0.5806	1.0000
4	0.8661	1.0000
5	0.4960	1.0000
6	0.4617	1.0000
7	0.4951	1.0000
8	0.8042	1.0000
9	0.4948	1.0000
10	0.4606	1.0000
11	0.4939	1.0000
12	0.8041	1.0000
13	0.4958	1.0000
14	0.4615	1.0000
15	0.4949	1.0000
16	0.8041	1.0000
17	0.5845	1.0000
18	0.5442	1.0000
19	0.5786	1.0000
20	0.8648	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
47328.6	-7759.78	641.508
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-1954.19	6010.77	82743.9

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
1.49195E-03	-2.12660E-03	1.57904E-04
ANGLE ROT. X, RAD	ANGLE ROT. Y, RAD	ANGLE ROT. Z, RAD
-5.25141E-06	6.47044E-06	1.37507E-04

THE GLOBAL STRUCTURAL COORDINATE SYSTEM

\* PILE TOP DISPLACEMENTS \*

APPALTATORE:

Consorzio

Soci



ITINERARIO NAPOLI – BARI

RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

PROGETTAZIONE:

Mandataria

Mandanti



PROGETTO ESECUTIVO

RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO
IF28	01	E ZZ CL	VI0403 001	B	236 di 354

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	6.2201E-04	-2.0793E-03	1.2246E-04	-5.2514E-06	6.4704E-06	1.3751E-04
2	1.2408E-03	-2.0793E-03	1.4609E-04	-5.2514E-06	6.4704E-06	1.3751E-04
3	1.8596E-03	-2.0793E-03	1.6972E-04	-5.2514E-06	6.4704E-06	1.3751E-04
4	2.4783E-03	-2.0793E-03	1.9335E-04	-5.2514E-06	6.4704E-06	1.3751E-04
5	5.9289E-04	-2.1030E-03	1.2246E-04	-5.2514E-06	6.4704E-06	1.3751E-04
6	1.2117E-03	-2.1030E-03	1.4609E-04	-5.2514E-06	6.4704E-06	1.3751E-04
7	1.8304E-03	-2.1030E-03	1.6972E-04	-5.2514E-06	6.4704E-06	1.3751E-04
8	2.4492E-03	-2.1030E-03	1.9335E-04	-5.2514E-06	6.4704E-06	1.3751E-04
9	5.6377E-04	-2.1266E-03	1.2246E-04	-5.2514E-06	6.4704E-06	1.3751E-04
10	1.1826E-03	-2.1266E-03	1.4609E-04	-5.2514E-06	6.4704E-06	1.3751E-04
11	1.8013E-03	-2.1266E-03	1.6972E-04	-5.2514E-06	6.4704E-06	1.3751E-04
12	2.4201E-03	-2.1266E-03	1.9335E-04	-5.2514E-06	6.4704E-06	1.3751E-04
13	5.3466E-04	-2.1502E-03	1.2246E-04	-5.2514E-06	6.4704E-06	1.3751E-04
14	1.1534E-03	-2.1502E-03	1.4609E-04	-5.2514E-06	6.4704E-06	1.3751E-04
15	1.7722E-03	-2.1502E-03	1.6972E-04	-5.2514E-06	6.4704E-06	1.3751E-04
16	2.3910E-03	-2.1502E-03	1.9335E-04	-5.2514E-06	6.4704E-06	1.3751E-04
17	5.0554E-04	-2.1739E-03	1.2246E-04	-5.2514E-06	6.4704E-06	1.3751E-04
18	1.1243E-03	-2.1739E-03	1.4609E-04	-5.2514E-06	6.4704E-06	1.3751E-04
19	1.7431E-03	-2.1739E-03	1.6972E-04	-5.2514E-06	6.4704E-06	1.3751E-04
20	2.3619E-03	-2.1739E-03	1.9335E-04	-5.2514E-06	6.4704E-06	1.3751E-04
MINIMUM	5.0554E-04	-2.1739E-03	1.2246E-04	-5.2514E-06	6.4704E-06	1.3751E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	2.4783E-03	-2.0793E-03	1.9335E-04	-5.2514E-06	6.4704E-06	1.3751E-04
Pile N.	4	1	4	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	1021.1	-376.26	23.337	-1.8416	-65.113	-1005.3
2	2031.3	-360.08	27.549	-1.8416	-79.860	-973.97
3	3040.3	-373.44	33.907	-1.8416	-98.905	-1000.9
4	3721.3	-476.72	49.583	-1.8416	-135.71	-1195.8
5	973.56	-344.67	21.117	-1.8416	-60.658	-948.69
6	1983.8	-329.75	24.955	-1.8416	-74.550	-918.81
7	2994.0	-343.77	30.895	-1.8416	-92.801	-948.02
8	3689.3	-461.98	47.474	-1.8416	-131.81	-1176.3
9	926.03	-348.97	21.081	-1.8416	-60.584	-963.55
10	1936.2	-333.90	24.912	-1.8416	-74.462	-933.31
11	2946.5	-348.08	30.843	-1.8416	-92.696	-962.90
12	3657.2	-468.26	47.459	-1.8416	-131.78	-1195.2
13	878.49	-354.26	21.102	-1.8416	-60.629	-980.40
14	1888.7	-338.97	24.938	-1.8416	-74.516	-949.74
15	2898.9	-353.35	30.874	-1.8416	-92.762	-979.74
16	3625.2	-474.58	47.448	-1.8416	-131.76	-1214.1
17	830.96	-396.72	23.269	-1.8416	-64.985	-1071.5
18	1841.2	-379.64	27.463	-1.8416	-79.693	-1038.3
19	2851.4	-393.75	33.811	-1.8416	-98.720	-1066.8
20	3593.1	-502.63	49.492	-1.8416	-135.56	-1272.8
MINIMUM	830.96	-502.63	21.081	-1.8416	-135.71	-1272.8
Pile N.	17	20	9	1	4	20
MAXIMUM	3721.3	-329.75	49.583	-1.8416	-60.584	-918.81
Pile N.	4	6	4	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	6.2201E-04	-2.0793E-03	1.2246E-04	-5.2514E-06	6.4704E-06	1.3751E-04
2	1.2408E-03	-2.0793E-03	1.4609E-04	-5.2514E-06	6.4704E-06	1.3751E-04
3	1.8596E-03	-2.0793E-03	1.6972E-04	-5.2514E-06	6.4704E-06	1.3751E-04
4	2.4783E-03	-2.0793E-03	1.9335E-04	-5.2514E-06	6.4704E-06	1.3751E-04
5	5.9289E-04	-2.1030E-03	1.2246E-04	-5.2514E-06	6.4704E-06	1.3751E-04
6	1.2117E-03	-2.1030E-03	1.4609E-04	-5.2514E-06	6.4704E-06	1.3751E-04
7	1.8304E-03	-2.1030E-03	1.6972E-04	-5.2514E-06	6.4704E-06	1.3751E-04
8	2.4492E-03	-2.1030E-03	1.9335E-04	-5.2514E-06	6.4704E-06	1.3751E-04
9	5.6377E-04	-2.1266E-03	1.2246E-04	-5.2514E-06	6.4704E-06	1.3751E-04
10	1.1826E-03	-2.1266E-03	1.4609E-04	-5.2514E-06	6.4704E-06	1.3751E-04
11	1.8013E-03	-2.1266E-03	1.6972E-04	-5.2514E-06	6.4704E-06	1.3751E-04
12	2.4201E-03	-2.1266E-03	1.9335E-04	-5.2514E-06	6.4704E-06	1.3751E-04
13	5.3466E-04	-2.1502E-03	1.2246E-04	-5.2514E-06	6.4704E-06	1.3751E-04
14	1.1534E-03	-2.1502E-03	1.4609E-04	-5.2514E-06	6.4704E-06	1.3751E-04
15	1.7722E-03	-2.1502E-03	1.6972E-04	-5.2514E-06	6.4704E-06	1.3751E-04
16	2.3910E-03	-2.1502E-03	1.9335E-04	-5.2514E-06	6.4704E-06	1.3751E-04
17	5.0554E-04	-2.1739E-03	1.2246E-04	-5.2514E-06	6.4704E-06	1.3751E-04
18	1.1243E-03	-2.1739E-03	1.4609E-04	-5.2514E-06	6.4704E-06	1.3751E-04
19	1.7431E-03	-2.1739E-03	1.6972E-04	-5.2514E-06	6.4704E-06	1.3751E-04
20	2.3619E-03	-2.1739E-03	1.9335E-04	-5.2514E-06	6.4704E-06	1.3751E-04
MINIMUM	5.0554E-04	-2.1739E-03	1.2246E-04	-5.2514E-06	6.4704E-06	1.3751E-04

<b>APPALTATORE:</b> Consorzio  Soci  		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria  Mandanti  							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>							COMMESSA <b>IF28</b>

Pile N.	17	17	1	1	1	1
MAXIMUM	2.4783E-03	-2.0793E-03	1.9335E-04	-5.2514E-06	6.4704E-06	1.3751E-04
Pile N.	4	1	4	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	1021.1	-376.26	23.337	-1.8416	-65.113	-1005.3
2	2031.3	-360.08	27.549	-1.8416	-79.860	-973.97
3	3040.3	-373.44	33.907	-1.8416	-98.905	-1000.9
4	3721.3	-476.72	49.583	-1.8416	-135.71	-1195.8
5	973.56	-344.67	21.117	-1.8416	-60.658	-948.69
6	1983.8	-329.75	24.955	-1.8416	-74.550	-918.81
7	2994.0	-343.77	30.895	-1.8416	-92.801	-948.02
8	3689.3	-461.98	47.474	-1.8416	-131.81	-1176.3
9	926.03	-348.97	21.081	-1.8416	-60.584	-963.55
10	1936.2	-333.90	24.912	-1.8416	-74.462	-933.31
11	2946.5	-348.08	30.843	-1.8416	-92.696	-962.90
12	3657.2	-468.26	47.459	-1.8416	-131.78	-1195.2
13	878.49	-354.26	21.102	-1.8416	-60.629	-980.40
14	1888.7	-338.97	24.938	-1.8416	-74.516	-949.74
15	2898.9	-353.35	30.874	-1.8416	-92.762	-979.74
16	3625.2	-474.58	47.448	-1.8416	-131.76	-1214.1
17	830.96	-396.72	23.269	-1.8416	-64.985	-1071.5
18	1841.2	-379.64	27.463	-1.8416	-79.693	-1038.3
19	2851.4	-393.75	33.811	-1.8416	-98.720	-1066.8
20	3593.1	-502.63	49.492	-1.8416	-135.56	-1272.8
MINIMUM	830.96	-502.63	21.081	-1.8416	-135.71	-1272.8
Pile N.	17	20	9	1	4	20
MAXIMUM	3721.3	-329.75	49.583	-1.8416	-60.584	-918.81
Pile N.	4	6	4	1	9	6







PILE GROUP	STRESS, KN/ M**2
1	3618.3
2	4098.8
3	4756.0
4	5737.9
5	3420.0
6	3904.7
7	4569.1
8	5660.1
9	3437.8
10	3921.4
11	4586.9
12	5698.5
13	3461.7
14	3944.0
15	4610.6
16	5737.3
17	3710.0
18	4184.7
19	4847.0
20	5896.4
MINIMUM	3420.0
Pile N.	5
MAXIMUM	5896.4
Pile N.	20

\* 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	-2.0793E-03	-3.5423E-06	-450.81	-65.113	-376.28	-5.3137	-109.33	-1.3835	577.82	7.8279E+06	7.8279E+06
x( M)	0.0000	11.880	6.4800	0.0000	0.0000	9.3600	5.0400	12.240	18.000	0.0000	0.0000
2	-2.0793E-03	-4.3363E-06	-439.19	-79.860	-360.10	-6.1174	-104.05	-1.5909	1149.5	7.8279E+06	7.8279E+06
x( M)	0.0000	12.060	6.4800	0.0000	0.0000	9.5400	5.0400	12.240	18.000	0.0000	0.0000
3	-2.0793E-03	-5.0063E-06	-449.37	-98.905	-373.47	-7.4251	-108.53	-1.9464	1720.5	7.8279E+06	7.8279E+06
x( M)	0.0000	12.060	6.4800	0.0000	0.0000	9.3600	5.0400	12.240	18.000	0.0000	0.0000
4	-2.0793E-03	-5.1990E-06	-519.44	-135.71	-476.77	-10.788	-141.60	-2.8185	2105.8	7.8279E+06	7.8279E+06
x( M)	0.0000	11.160	6.1200	0.0000	0.0000	8.8200	5.0400	11.700	18.000	0.0000	0.0000
5	-2.1030E-03	-3.6711E-06	-428.80	-60.658	-344.68	-4.7899	-98.592	-1.2258	550.92	7.8279E+06	7.8279E+06
x( M)	0.0000	12.240	6.6600	0.0000	0.0000	9.5400	5.0400	12.240	18.000	0.0000	0.0000
6	-2.1030E-03	-4.4793E-06	-417.65	-74.550	-329.77	-5.5076	-93.664	-1.3885	1122.6	7.8279E+06	7.8279E+06
x( M)	0.0000	12.420	6.6600	0.0000	0.0000	9.7200	5.0400	12.240	18.000	0.0000	0.0000
7	-2.1030E-03	-5.1758E-06	-428.74	-92.801	-343.80	-6.7273	-98.426	-1.7251	1694.3	7.8279E+06	7.8279E+06
x( M)	0.0000	12.240	6.6600	0.0000	0.0000	9.7200	5.0400	12.240	18.000	0.0000	0.0000
8	-2.1030E-03	-5.2965E-06	-511.62	-131.81	-462.03	-10.340	-136.87	-2.7042	2087.7	7.8279E+06	7.8279E+06
x( M)	0.0000	11.340	6.1200	0.0000	0.0000	9.0000	5.0400	11.700	18.000	0.0000	0.0000
9	-2.1266E-03	-3.6727E-06	-433.40	-60.584	-348.98	-4.7818	-99.766	-1.2233	524.02	7.8279E+06	7.8279E+06
x( M)	0.0000	12.240	6.6600	0.0000	0.0000	9.5400	5.0400	12.240	18.000	0.0000	0.0000



<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>				
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>					
<b>COMMESSA</b> <b>IF28</b>	<b>LOTTO</b> <b>01</b>	<b>CODIFICA</b> <b>E ZZ CL</b>	<b>DOCUMENTO</b> <b>VI0403 001</b>	<b>REV.</b> <b>B</b>	<b>FOGLIO</b> <b>239 di 354</b>

2	0.5483	1.0000
3	0.5823	1.0000
4	0.8661	1.0000
5	0.4966	1.0000
6	0.4620	1.0000
7	0.4951	1.0000
8	0.8030	1.0000
9	0.4951	1.0000
10	0.4606	1.0000
11	0.4937	1.0000
12	0.8027	1.0000
13	0.4961	1.0000
14	0.4615	1.0000
15	0.4947	1.0000
16	0.8027	1.0000
17	0.5845	1.0000
18	0.5439	1.0000
19	0.5781	1.0000
20	0.8632	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
48460.4	-7435.37	877.148
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-2574.63	10542.0	76048.5

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
1.52489E-03	-2.02384E-03	2.22418E-04
ANGLE ROT. X, RAD	ANGLE ROT. Y, RAD	ANGLE ROT. Z, RAD
-6.90942E-06	1.09212E-05	1.27849E-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	7.6020E-04	-1.9617E-03	1.7578E-04	-6.9094E-06	1.0921E-05	1.2785E-04
2	1.3355E-03	-1.9617E-03	2.0687E-04	-6.9094E-06	1.0921E-05	1.2785E-04
3	1.9108E-03	-1.9617E-03	2.3796E-04	-6.9094E-06	1.0921E-05	1.2785E-04
4	2.4862E-03	-1.9617E-03	2.6906E-04	-6.9094E-06	1.0921E-05	1.2785E-04
5	7.1106E-04	-1.9928E-03	1.7578E-04	-6.9094E-06	1.0921E-05	1.2785E-04
6	1.2864E-03	-1.9928E-03	2.0687E-04	-6.9094E-06	1.0921E-05	1.2785E-04
7	1.8617E-03	-1.9928E-03	2.3796E-04	-6.9094E-06	1.0921E-05	1.2785E-04
8	2.4370E-03	-1.9928E-03	2.6906E-04	-6.9094E-06	1.0921E-05	1.2785E-04
9	6.6191E-04	-2.0238E-03	1.7578E-04	-6.9094E-06	1.0921E-05	1.2785E-04
10	1.2372E-03	-2.0238E-03	2.0687E-04	-6.9094E-06	1.0921E-05	1.2785E-04
11	1.8126E-03	-2.0238E-03	2.3796E-04	-6.9094E-06	1.0921E-05	1.2785E-04
12	2.3879E-03	-2.0238E-03	2.6906E-04	-6.9094E-06	1.0921E-05	1.2785E-04
13	6.1277E-04	-2.0549E-03	1.7578E-04	-6.9094E-06	1.0921E-05	1.2785E-04
14	1.1881E-03	-2.0549E-03	2.0687E-04	-6.9094E-06	1.0921E-05	1.2785E-04
15	1.7634E-03	-2.0549E-03	2.3796E-04	-6.9094E-06	1.0921E-05	1.2785E-04
16	2.3387E-03	-2.0549E-03	2.6906E-04	-6.9094E-06	1.0921E-05	1.2785E-04
17	5.6362E-04	-2.0860E-03	1.7578E-04	-6.9094E-06	1.0921E-05	1.2785E-04
18	1.1389E-03	-2.0860E-03	2.0687E-04	-6.9094E-06	1.0921E-05	1.2785E-04
19	1.7143E-03	-2.0860E-03	2.3796E-04	-6.9094E-06	1.0921E-05	1.2785E-04
20	2.2896E-03	-2.0860E-03	2.6906E-04	-6.9094E-06	1.0921E-05	1.2785E-04
MINIMUM	5.6362E-04	-2.0860E-03	1.7578E-04	-6.9094E-06	1.0921E-05	1.2785E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	2.4862E-03	-1.9617E-03	2.6906E-04	-6.9094E-06	1.0921E-05	1.2785E-04
Pile N.	4	1	4	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	1246.7	-357.49	32.422	-2.4231	-87.739	-957.47
2	2186.0	-342.14	37.892	-2.4231	-107.02	-927.71
3	3096.7	-354.66	46.335	-2.4231	-132.21	-952.90
4	3729.9	-451.77	67.468	-2.4231	-181.50	-1136.0
5	1166.5	-328.79	29.246	-2.4231	-81.404	-908.61
6	2105.7	-314.48	34.209	-2.4231	-99.523	-879.87

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   		<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>		<b>COMMESSA</b> <b>IF28</b>	<b>LOTTO</b> <b>01</b>	<b>CODIFICA</b> <b>E ZZ CL</b>	<b>DOCUMENTO</b> <b>VI0403 001</b>	<b>REV.</b> <b>B</b>	<b>FOGLIO</b> <b>240 di 354</b>

7	3042.6	-327.73	42.096	-2.4231	-123.67	-907.47
8	3675.8	-439.75	64.509	-2.4231	-176.04	-1123.9
9	1086.2	-334.58	29.184	-2.4231	-81.279	-928.39
10	2025.5	-320.04	34.139	-2.4231	-99.378	-899.17
11	2964.8	-333.52	42.014	-2.4231	-123.50	-927.29
12	3621.7	-448.00	64.477	-2.4231	-175.98	-1148.7
13	1006.0	-341.39	29.213	-2.4231	-81.338	-950.26
14	1945.3	-326.58	34.172	-2.4231	-99.448	-920.48
15	2884.5	-340.32	42.054	-2.4231	-123.58	-949.13
16	3567.6	-456.33	64.459	-2.4231	-175.95	-1173.6
17	925.78	-383.94	32.246	-2.4231	-87.398	-1043.5
18	1865.0	-367.35	37.668	-2.4231	-106.57	-1011.2
19	2804.3	-380.90	46.087	-2.4231	-131.73	-1038.6
20	3513.6	-485.60	67.259	-2.4231	-181.14	-1236.9
MINIMUM	925.78	-485.60	29.184	-2.4231	-181.50	-1236.9
Pile N.	17	20	9	1	4	20
MAXIMUM	3729.9	-314.48	67.468	-2.4231	-81.279	-879.87
Pile N.	4	6	4	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	7.6020E-04	-1.9617E-03	1.7578E-04	-6.9094E-06	1.0921E-05	1.2785E-04
2	1.3355E-03	-1.9617E-03	2.0687E-04	-6.9094E-06	1.0921E-05	1.2785E-04
3	1.9108E-03	-1.9617E-03	2.3796E-04	-6.9094E-06	1.0921E-05	1.2785E-04
4	2.4862E-03	-1.9617E-03	2.6906E-04	-6.9094E-06	1.0921E-05	1.2785E-04
5	7.1106E-04	-1.9928E-03	1.7578E-04	-6.9094E-06	1.0921E-05	1.2785E-04
6	1.2864E-03	-1.9928E-03	2.0687E-04	-6.9094E-06	1.0921E-05	1.2785E-04
7	1.8617E-03	-1.9928E-03	2.3796E-04	-6.9094E-06	1.0921E-05	1.2785E-04
8	2.4370E-03	-1.9928E-03	2.6906E-04	-6.9094E-06	1.0921E-05	1.2785E-04
9	6.6191E-04	-2.0238E-03	1.7578E-04	-6.9094E-06	1.0921E-05	1.2785E-04
10	1.2372E-03	-2.0238E-03	2.0687E-04	-6.9094E-06	1.0921E-05	1.2785E-04
11	1.8126E-03	-2.0238E-03	2.3796E-04	-6.9094E-06	1.0921E-05	1.2785E-04
12	2.3879E-03	-2.0238E-03	2.6906E-04	-6.9094E-06	1.0921E-05	1.2785E-04
13	6.1277E-04	-2.0549E-03	1.7578E-04	-6.9094E-06	1.0921E-05	1.2785E-04
14	1.1881E-03	-2.0549E-03	2.0687E-04	-6.9094E-06	1.0921E-05	1.2785E-04
15	1.7634E-03	-2.0549E-03	2.3796E-04	-6.9094E-06	1.0921E-05	1.2785E-04
16	2.3387E-03	-2.0549E-03	2.6906E-04	-6.9094E-06	1.0921E-05	1.2785E-04
17	5.6362E-04	-2.0860E-03	1.7578E-04	-6.9094E-06	1.0921E-05	1.2785E-04
18	1.1389E-03	-2.0860E-03	2.0687E-04	-6.9094E-06	1.0921E-05	1.2785E-04
19	1.7143E-03	-2.0860E-03	2.3796E-04	-6.9094E-06	1.0921E-05	1.2785E-04
20	2.2896E-03	-2.0860E-03	2.6906E-04	-6.9094E-06	1.0921E-05	1.2785E-04
MINIMUM	5.6362E-04	-2.0860E-03	1.7578E-04	-6.9094E-06	1.0921E-05	1.2785E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	2.4862E-03	-1.9617E-03	2.6906E-04	-6.9094E-06	1.0921E-05	1.2785E-04
Pile N.	4	1	4	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	1246.7	-357.49	32.422	-2.4231	-87.739	-957.47
2	2186.0	-342.14	37.892	-2.4231	-107.02	-927.71
3	3096.7	-354.66	46.335	-2.4231	-132.21	-952.90
4	3729.9	-451.77	67.468	-2.4231	-181.50	-1136.0
5	1166.5	-328.79	29.246	-2.4231	-81.404	-908.61
6	2105.7	-314.48	34.209	-2.4231	-99.523	-879.87
7	3042.6	-327.73	42.096	-2.4231	-123.67	-907.47
8	3675.8	-439.75	64.509	-2.4231	-176.04	-1123.9
9	1086.2	-334.58	29.184	-2.4231	-81.279	-928.39
10	2025.5	-320.04	34.139	-2.4231	-99.378	-899.17
11	2964.8	-333.52	42.014	-2.4231	-123.50	-927.29
12	3621.7	-448.00	64.477	-2.4231	-175.98	-1148.7
13	1006.0	-341.39	29.213	-2.4231	-81.338	-950.26
14	1945.3	-326.58	34.172	-2.4231	-99.448	-920.48
15	2884.5	-340.32	42.054	-2.4231	-123.58	-949.13
16	3567.6	-456.33	64.459	-2.4231	-175.95	-1173.6
17	925.78	-383.94	32.246	-2.4231	-87.398	-1043.5
18	1865.0	-367.35	37.668	-2.4231	-106.57	-1011.2
19	2804.3	-380.90	46.087	-2.4231	-131.73	-1038.6
20	3513.6	-485.60	67.259	-2.4231	-181.14	-1236.9
MINIMUM	925.78	-485.60	29.184	-2.4231	-181.50	-1236.9
Pile N.	17	20	9	1	4	20
MAXIMUM	3729.9	-314.48	67.468	-2.4231	-81.279	-879.87
Pile N.	4	6	4	1	9	6

PILE GROUP	STRESS, KN/ M**2
*****	*****
1	3607.3
2	4055.4



APPALTATORE:

Consorzio

Soci



ITINERARIO NAPOLI – BARI

RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

PROGETTAZIONE:

Mandataria

Mandanti



PROGETTO ESECUTIVO

RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

COMMESSA  
IF28

LOTTO  
01

CODIFICA  
E ZZ CL

DOCUMENTO  
VI0403 001

REV.  
B

FOGLIO  
241 di  
354

3	4655.8
4	5582.8
5	3413.3
6	3864.0
7	4485.9
8	5513.3
9	3427.3
10	3876.5
11	4501.0
12	5556.6
13	3447.7
14	3895.0
15	4521.0
16	5600.5
17	3684.4
18	4124.2
19	4746.6
20	5761.0

MINIMUM	3413.3
Pile N.	5
MAXIMUM	5761.0
Pile N.	20

\* 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	-1.9617E-03	-5.0338E-06	-426.21	-87.739	-357.51	-7.5862	-103.71	-1.9659	705.50	7.8279E+06	7.8279E+06
x( M)	0.0000	11.880	6.4800	0.0000	0.0000	9.3600	5.0400	12.240	18.000	0.0000	0.0000
2	-1.9617E-03	-6.0831E-06	-415.20	-107.02	-342.17	-8.6205	-98.703	-2.2363	1237.0	7.8279E+06	7.8279E+06
x( M)	0.0000	12.060	6.4800	0.0000	0.0000	9.3600	5.0400	12.240	18.000	0.0000	0.0000
3	-1.9617E-03	-6.9583E-06	-424.70	-132.21	-354.69	-10.364	-102.90	-2.7066	1752.4	7.8279E+06	7.8279E+06
x( M)	0.0000	11.880	6.4800	0.0000	0.0000	9.3600	5.0400	12.240	18.000	0.0000	0.0000
4	-1.9617E-03	-7.1811E-06	-490.40	-181.50	-451.82	-14.915	-133.96	-3.8827	2110.7	7.8279E+06	7.8279E+06
x( M)	0.0000	11.160	6.1200	0.0000	0.0000	8.8200	5.0400	11.520	18.000	0.0000	0.0000
5	-1.9928E-03	-5.2216E-06	-406.87	-81.404	-328.81	-6.8353	-93.858	-1.7457	660.09	7.8279E+06	7.8279E+06
x( M)	0.0000	12.240	6.6600	0.0000	0.0000	9.5400	5.0400	12.240	18.000	0.0000	0.0000
6	-1.9928E-03	-6.2908E-06	-396.14	-99.523	-314.50	-7.7498	-89.126	-1.9544	1191.6	7.8279E+06	7.8279E+06
x( M)	0.0000	12.420	6.6600	0.0000	0.0000	9.7200	5.0400	12.240	18.000	0.0000	0.0000
7	-1.9928E-03	-7.2032E-06	-406.62	-123.67	-327.76	-9.3674	-93.625	-2.4009	1721.8	7.8279E+06	7.8279E+06
x( M)	0.0000	12.240	6.6600	0.0000	0.0000	9.5400	5.0400	12.240	18.000	0.0000	0.0000
8	-1.9928E-03	-7.3163E-06	-484.92	-176.04	-439.80	-14.274	-130.04	-3.7214	2080.1	7.8279E+06	7.8279E+06
x( M)	0.0000	11.340	6.1200	0.0000	0.0000	9.0000	5.0400	11.700	18.000	0.0000	0.0000
9	-2.0238E-03	-5.2246E-06	-412.99	-81.279	-334.59	-6.8218	-95.434	-1.7414	614.69	7.8279E+06	7.8279E+06
x( M)	0.0000	12.240	6.6600	0.0000	0.0000	9.5400	5.0400	12.240	18.000	0.0000	0.0000
10	-2.0238E-03	-6.2938E-06	-402.06	-99.378	-320.06	-7.7345	-90.624	-1.9491	1146.2	7.8279E+06	7.8279E+06
x( M)	0.0000	12.420	6.6600	0.0000	0.0000	9.7200	5.0400	12.240	18.000	0.0000	0.0000
11	-2.0238E-03	-7.2062E-06	-412.76	-123.50	-333.56	-9.3488	-95.208	-2.3949	1677.7	7.8279E+06	7.8279E+06
x( M)	0.0000	12.240	6.6600	0.0000	0.0000	9.5400	5.0400	12.240	18.000	0.0000	0.0000
12	-2.0238E-03	-7.3166E-06	-492.75	-175.98	-448.05	-14.271	-132.47	-3.7205	2049.5	7.8279E+06	7.8279E+06
x( M)	0.0000	11.340	6.3000	0.0000	0.0000	9.0000	5.0400	11.700	18.000	0.0000	0.0000
13	-2.0549E-03	-5.2216E-06	-419.89	-81.338	-341.40	-6.8298	-97.357	-1.7440	569.29	7.8279E+06	7.8279E+06
x( M)	0.0000	12.240	6.6600	0.0000	0.0000	9.5400	5.0400	12.240	18.000	0.0000	0.0000
14	-2.0549E-03	-6.2905E-06	-408.75	-99.448	-326.60	-7.7438	-92.453	-1.9524	1100.8	7.8279E+06	7.8279E+06
x( M)	0.0000	12.420	6.6600	0.0000	0.0000	9.7200	5.0400	12.240	18.000	0.0000	0.0000
15	-2.0549E-03	-7.2027E-06	-419.65	-123.58	-340.35	-9.3605	-97.127	-2.3988	1632.3	7.8279E+06	7.8279E+06
x( M)	0.0000	12.240	6.6600	0.0000	0.0000	9.5400	5.0400	12.240	18.000	0.0000	0.0000
16	-2.0549E-03	-7.3161E-06	-500.68	-175.95	-456.38	-14.270	-134.94	-3.7204	2018.9	7.8279E+06	7.8279E+06
x( M)	0.0000	11.340	6.3000	0.0000	0.0000	9.0000	5.0400	11.700	18.000	0.0000	0.0000
17	-2.0860E-03	-5.0407E-06	-453.07	-87.398	-383.95	-7.5516	-111.19	-1.9566	523.88	7.8279E+06	7.8279E+06
x( M)	0.0000	11.880	6.4800	0.0000	0.0000	9.3600	5.0400	12.240	18.000	0.0000	0.0000
18	-2.0860E-03	-6.0918E-06	-441.12	-106.57	-367.37	-8.5723	-105.74	-2.2228	1055.4	7.8279E+06	7.8279E+06
x( M)	0.0000	12.060	6.6600	0.0000	0.0000	9.3600	5.0400	12.240	18.000	0.0000	0.0000
19	-2.0860E-03	-6.9657E-06	-451.43	-131.73	-380.93	-10.314	-110.31	-2.6930	1586.9	7.8279E+06	7.8279E+06
x( M)	0.0000	11.880	6.4800	0.0000	0.0000	9.3600	5.0400	12.240	18.000	0.0000	0.0000
20	-2.0860E-03	-7.1853E-06	-522.16	-181.14	-485.65	-14.883	-143.99	-3.8747	1988.3	7.8279E+06	7.8279E+06
x( M)	0.0000	11.160	6.1200	0.0000	0.0000	8.8200	5.0400	11.520	18.000	0.0000	0.0000
Min.	-2.0860E-03	-7.3166E-06	-522.16	-181.50	-485.65	-14.915	-143.99	-3.8827	523.88	7.8279E+06	7.8279E+06
Pile N.	17	12	20	4	20	4	20	4	17	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	5.6001E-05	1.7578E-04	957.47	38.266	84.457	32.423	21.847	9.3855	3607.3	7.8279E+06	7.8279E+06
x( M)	11.880	0.0000	0.0000	6.4800	9.1800	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
2	5.6980E-05	2.0687E-04	927.71	44.160	81.007	37.894	20.885	10.832	4055.4	7.8279E+06	7.8279E+06
x( M)	11.880	0.0000	0.0000	6.6600	9.3600	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
3	5.6271E-05	2.3796E-04	952.90	52.215	84.057	46.340	21.738	13.269	4655.8	7.8279E+06	7.8279E+06
x( M)	11.880	0.0000	0.0000	6.6600	9.3600	0.0000	12.240	5.0400	0.0000	0.0000	0.0000

APPALTATORE: Consorzio <b>HirpiniaAV</b> Soci <b>salini impregio</b> <b>ASTALDI</b>		<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>				
PROGETTAZIONE: Mandataria <b>ROKSOJL</b> Mandanti <b>NETENGINEERING</b> <b>Alpina</b>						
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B						
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	
IF28	01	E ZZ CL	VI0403 001	B	242 di 354	

4	5.1110E-05	2.6906E-04	1136.0	68.537	106.27	67.475	27.333	19.824	5582.8	7.8279E+06	7.8279E+06
x( M)	10.980	0.0000	0.0000	6.3000	8.8200	0.0000	11.520	5.0400	0.0000	0.0000	0.0000
5	5.9077E-05	1.7578E-04	908.61	35.936	77.373	29.247	19.750	8.3342	3413.3	7.8279E+06	7.8279E+06
x( M)	12.240	0.0000	0.0000	6.6600	9.5400	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
6	5.9993E-05	2.0687E-04	879.87	41.433	74.013	34.212	18.657	9.5992	3864.0	7.8279E+06	7.8279E+06
x( M)	12.240	0.0000	0.0000	6.8400	9.5400	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
7	5.9249E-05	2.3796E-04	907.47	49.157	77.390	42.101	19.748	11.851	4485.9	7.8279E+06	7.8279E+06
x( M)	12.240	0.0000	0.0000	6.8400	9.5400	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
8	5.2935E-05	2.6906E-04	1123.9	66.689	103.52	64.517	26.630	18.887	5513.3	7.8279E+06	7.8279E+06
x( M)	11.160	0.0000	0.0000	6.3000	8.8200	0.0000	11.700	5.0400	0.0000	0.0000	0.0000
9	6.0092E-05	1.7578E-04	928.39	35.894	78.482	29.185	20.029	8.3171	3427.3	7.8279E+06	7.8279E+06
x( M)	12.240	0.0000	0.0000	6.6600	9.5400	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
10	6.0999E-05	2.0687E-04	899.17	41.385	75.057	34.142	18.913	9.5795	3876.5	7.8279E+06	7.8279E+06
x( M)	12.240	0.0000	0.0000	6.8400	9.5400	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
11	6.0265E-05	2.3796E-04	927.29	49.103	78.507	42.018	20.029	11.828	4501.0	7.8279E+06	7.8279E+06
x( M)	12.240	0.0000	0.0000	6.8400	9.5400	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
12	5.3810E-05	2.6906E-04	1148.7	66.677	105.19	64.485	27.079	18.884	5556.6	7.8279E+06	7.8279E+06
x( M)	11.160	0.0000	0.0000	6.3000	8.8200	0.0000	11.700	5.0400	0.0000	0.0000	0.0000
13	6.1038E-05	1.7578E-04	950.26	35.920	79.839	29.213	20.386	8.3303	3447.7	7.8279E+06	7.8279E+06
x( M)	12.240	0.0000	0.0000	6.6600	9.5400	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
14	6.1955E-05	2.0687E-04	920.48	41.415	76.348	34.175	19.250	9.5947	3895.0	7.8279E+06	7.8279E+06
x( M)	12.240	0.0000	0.0000	6.8400	9.5400	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
15	6.1213E-05	2.3796E-04	949.13	49.139	79.864	42.058	20.387	11.847	4521.0	7.8279E+06	7.8279E+06
x( M)	12.240	0.0000	0.0000	6.8400	9.5400	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
16	5.4680E-05	2.6906E-04	1173.6	66.675	106.88	64.466	27.533	18.886	5600.5	7.8279E+06	7.8279E+06
x( M)	11.160	0.0000	0.0000	6.3000	8.8200	0.0000	11.700	5.0400	0.0000	0.0000	0.0000
17	5.9870E-05	1.7578E-04	1043.5	38.158	89.682	32.247	23.247	9.3436	3684.4	7.8279E+06	7.8279E+06
x( M)	11.880	0.0000	0.0000	6.4800	9.3600	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
18	6.0896E-05	2.0687E-04	1011.2	44.021	85.918	37.670	22.185	10.775	4124.2	7.8279E+06	7.8279E+06
x( M)	12.060	0.0000	0.0000	6.6600	9.3600	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
19	6.0153E-05	2.3796E-04	1038.6	52.071	89.268	46.092	23.128	13.209	4746.6	7.8279E+06	7.8279E+06
x( M)	11.880	0.0000	0.0000	6.6600	9.3600	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
20	5.4554E-05	2.6906E-04	1236.9	68.449	113.19	67.266	29.173	19.791	5761.0	7.8279E+06	7.8279E+06
x( M)	10.980	0.0000	0.0000	6.3000	8.8200	0.0000	11.520	5.0400	0.0000	0.0000	0.0000
Max.	6.1955E-05	2.6906E-04	1236.9	68.537	113.19	67.475	29.173	19.824	5761.0	7.8279E+06	7.8279E+06
Pile N.	14	4	20	4	20	4	20	4	20	1	1

LOAD CASE : 12  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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	0.5864	1.0000
2	0.5462	1.0000
3	0.5805	1.0000
4	0.8661	1.0000
5	0.4960	1.0000
6	0.4617	1.0000
7	0.4951	1.0000
8	0.8043	1.0000
9	0.4947	1.0000
10	0.4606	1.0000
11	0.4939	1.0000
12	0.8041	1.0000
13	0.4958	1.0000
14	0.4615	1.0000
15	0.4949	1.0000
16	0.8041	1.0000
17	0.5845	1.0000
18	0.5442	1.0000
19	0.5787	1.0000
20	0.8648	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
45535.4	-7032.73	551.294
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-1501.35	5505.41	65866.8

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>		<b>COMMESSA</b> <b>IF28</b>	<b>LOTTO</b> <b>01</b>	<b>CODIFICA</b> <b>E ZZ CL</b>	<b>DOCUMENTO</b> <b>VI0403 001</b>	<b>REV.</b> <b>B</b>	<b>FOGLIO</b> <b>243 di 354</b>

VERTICAL , M 1.41529E-03	HORIZONTAL Y, M -1.87578E-03	HORIZONTAL Z, M 1.36539E-04
ANGLE ROT. X, RAD -3.93126E-06	ANGLE ROT. Y, RAD 5.82612E-06	ANGLE ROT. Z, RAD 1.09400E-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	7.2927E-04	-1.8404E-03	1.1000E-04	-3.9313E-06	5.8261E-06	1.0940E-04
2	1.2216E-03	-1.8404E-03	1.2769E-04	-3.9313E-06	5.8261E-06	1.0940E-04
3	1.7139E-03	-1.8404E-03	1.4538E-04	-3.9313E-06	5.8261E-06	1.0940E-04
4	2.2062E-03	-1.8404E-03	1.6307E-04	-3.9313E-06	5.8261E-06	1.0940E-04
5	7.0306E-04	-1.8581E-03	1.1000E-04	-3.9313E-06	5.8261E-06	1.0940E-04
6	1.1953E-03	-1.8581E-03	1.2769E-04	-3.9313E-06	5.8261E-06	1.0940E-04
7	1.6876E-03	-1.8581E-03	1.4538E-04	-3.9313E-06	5.8261E-06	1.0940E-04
8	2.1799E-03	-1.8581E-03	1.6307E-04	-3.9313E-06	5.8261E-06	1.0940E-04
9	6.7684E-04	-1.8758E-03	1.1000E-04	-3.9313E-06	5.8261E-06	1.0940E-04
10	1.1691E-03	-1.8758E-03	1.2769E-04	-3.9313E-06	5.8261E-06	1.0940E-04
11	1.6614E-03	-1.8758E-03	1.4538E-04	-3.9313E-06	5.8261E-06	1.0940E-04
12	2.1537E-03	-1.8758E-03	1.6307E-04	-3.9313E-06	5.8261E-06	1.0940E-04
13	6.5062E-04	-1.8935E-03	1.1000E-04	-3.9313E-06	5.8261E-06	1.0940E-04
14	1.1429E-03	-1.8935E-03	1.2769E-04	-3.9313E-06	5.8261E-06	1.0940E-04
15	1.6352E-03	-1.8935E-03	1.4538E-04	-3.9313E-06	5.8261E-06	1.0940E-04
16	2.1275E-03	-1.8935E-03	1.6307E-04	-3.9313E-06	5.8261E-06	1.0940E-04
17	6.2440E-04	-1.9112E-03	1.1000E-04	-3.9313E-06	5.8261E-06	1.0940E-04
18	1.1167E-03	-1.9112E-03	1.2769E-04	-3.9313E-06	5.8261E-06	1.0940E-04
19	1.6090E-03	-1.9112E-03	1.4538E-04	-3.9313E-06	5.8261E-06	1.0940E-04
20	2.1013E-03	-1.9112E-03	1.6307E-04	-3.9313E-06	5.8261E-06	1.0940E-04
MINIMUM	6.2440E-04	-1.9112E-03	1.1000E-04	-3.9313E-06	5.8261E-06	1.0940E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	2.2062E-03	-1.8404E-03	1.6307E-04	-3.9313E-06	5.8261E-06	1.0940E-04
Pile N.	4	1	4	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	1196.2	-342.58	20.992	-1.3787	-58.503	-935.49
2	1999.9	-328.05	24.007	-1.3787	-69.263	-907.12
3	2803.7	-340.14	28.901	-1.3787	-83.781	-931.47
4	3421.8	-433.16	41.602	-1.3787	-113.15	-1107.4
5	1153.4	-313.40	18.997	-1.3787	-54.502	-881.87
6	1957.1	-300.03	21.744	-1.3787	-64.639	-854.89
7	2760.9	-312.70	26.330	-1.3787	-78.580	-881.24
8	3392.9	-418.96	39.831	-1.3787	-109.87	-1087.0
9	1110.6	-316.56	18.966	-1.3787	-54.438	-892.87
10	1914.3	-303.08	21.709	-1.3787	-64.566	-865.62
11	2718.1	-315.87	26.288	-1.3787	-78.495	-892.26
12	3364.1	-423.69	39.821	-1.3787	-109.86	-1101.1
13	1067.8	-320.61	18.987	-1.3787	-54.481	-905.65
14	1871.5	-306.97	21.733	-1.3787	-64.616	-878.08
15	2675.3	-319.91	26.317	-1.3787	-78.554	-905.04
16	3335.2	-428.45	39.815	-1.3787	-109.85	-1115.4
17	1025.0	-357.90	20.940	-1.3787	-58.401	-984.99
18	1828.7	-342.69	23.942	-1.3787	-69.135	-955.21
19	2632.5	-355.36	28.830	-1.3787	-83.643	-980.78
20	3306.3	-452.63	41.541	-1.3787	-113.04	-1165.1
MINIMUM	1025.0	-452.63	18.966	-1.3787	-113.15	-1165.1
Pile N.	17	20	9	1	4	20
MAXIMUM	3421.8	-300.03	41.602	-1.3787	-54.438	-854.89
Pile N.	4	6	4	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	7.2927E-04	-1.8404E-03	1.1000E-04	-3.9313E-06	5.8261E-06	1.0940E-04
2	1.2216E-03	-1.8404E-03	1.2769E-04	-3.9313E-06	5.8261E-06	1.0940E-04
3	1.7139E-03	-1.8404E-03	1.4538E-04	-3.9313E-06	5.8261E-06	1.0940E-04
4	2.2062E-03	-1.8404E-03	1.6307E-04	-3.9313E-06	5.8261E-06	1.0940E-04
5	7.0306E-04	-1.8581E-03	1.1000E-04	-3.9313E-06	5.8261E-06	1.0940E-04
6	1.1953E-03	-1.8581E-03	1.2769E-04	-3.9313E-06	5.8261E-06	1.0940E-04
7	1.6876E-03	-1.8581E-03	1.4538E-04	-3.9313E-06	5.8261E-06	1.0940E-04
8	2.1799E-03	-1.8581E-03	1.6307E-04	-3.9313E-06	5.8261E-06	1.0940E-04
9	6.7684E-04	-1.8758E-03	1.1000E-04	-3.9313E-06	5.8261E-06	1.0940E-04
10	1.1691E-03	-1.8758E-03	1.2769E-04	-3.9313E-06	5.8261E-06	1.0940E-04

APPALTATORE:

Consorzio

Soci



ITINERARIO NAPOLI – BARI

PROGETTAZIONE:

Mandataria

Mandanti



RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

PROGETTO ESECUTIVO

RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 244 di 354
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11	1.6614E-03	-1.8758E-03	1.4538E-04	-3.9313E-06	5.8261E-06	1.0940E-04
12	2.1537E-03	-1.8758E-03	1.6307E-04	-3.9313E-06	5.8261E-06	1.0940E-04
13	6.5062E-04	-1.8935E-03	1.1000E-04	-3.9313E-06	5.8261E-06	1.0940E-04
14	1.1429E-03	-1.8935E-03	1.2769E-04	-3.9313E-06	5.8261E-06	1.0940E-04
15	1.6352E-03	-1.8935E-03	1.4538E-04	-3.9313E-06	5.8261E-06	1.0940E-04
16	2.1275E-03	-1.8935E-03	1.6307E-04	-3.9313E-06	5.8261E-06	1.0940E-04
17	6.2440E-04	-1.9112E-03	1.1000E-04	-3.9313E-06	5.8261E-06	1.0940E-04
18	1.1167E-03	-1.9112E-03	1.2769E-04	-3.9313E-06	5.8261E-06	1.0940E-04
19	1.6090E-03	-1.9112E-03	1.4538E-04	-3.9313E-06	5.8261E-06	1.0940E-04
20	2.1013E-03	-1.9112E-03	1.6307E-04	-3.9313E-06	5.8261E-06	1.0940E-04

MINIMUM	6.2440E-04	-1.9112E-03	1.1000E-04	-3.9313E-06	5.8261E-06	1.0940E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	2.2062E-03	-1.8404E-03	1.6307E-04	-3.9313E-06	5.8261E-06	1.0940E-04
Pile N.	4	1	4	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	1196.2	-342.58	20.992	-1.3787	-58.503	-935.49
2	1999.9	-328.05	24.007	-1.3787	-69.263	-907.12
3	2803.7	-340.14	28.901	-1.3787	-83.781	-931.47
4	3421.8	-433.16	41.602	-1.3787	-113.15	-1107.4
5	1153.4	-313.40	18.997	-1.3787	-54.502	-881.87
6	1957.1	-300.03	21.744	-1.3787	-64.639	-854.89
7	2760.9	-312.70	26.330	-1.3787	-78.580	-881.24
8	3392.9	-418.96	39.831	-1.3787	-109.87	-1087.0
9	1110.6	-316.56	18.966	-1.3787	-54.438	-892.87
10	1914.3	-303.08	21.709	-1.3787	-64.566	-865.62
11	2718.1	-315.87	26.288	-1.3787	-78.495	-892.26
12	3364.1	-423.69	39.821	-1.3787	-109.86	-1101.1
13	1067.8	-320.61	18.987	-1.3787	-54.481	-905.65
14	1871.5	-306.97	21.733	-1.3787	-64.616	-878.08
15	2675.3	-319.91	26.317	-1.3787	-78.554	-905.04
16	3335.2	-428.45	39.815	-1.3787	-109.85	-1115.4
17	1025.0	-357.90	20.940	-1.3787	-58.401	-984.99
18	1828.7	-342.69	23.942	-1.3787	-69.135	-955.21
19	2632.5	-355.36	28.830	-1.3787	-83.643	-980.78
20	3306.3	-452.63	41.541	-1.3787	-113.04	-1165.1
MINIMUM	1025.0	-452.63	18.966	-1.3787	-113.15	-1165.1
Pile N.	17	20	9	1	4	20
MAXIMUM	3421.8	-300.03	41.602	-1.3787	-54.438	-854.89
Pile N.	4	6	4	1	9	6

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

1	3505.8
2	3877.5
3	4409.1
4	5295.9
5	3319.3
6	3695.0
7	4232.5
8	5217.2
9	3328.2
10	3703.0
11	4241.4
12	5243.4
13	3342.5
14	3716.3
15	4255.6
16	5269.8
17	3558.0
18	3925.3
19	4460.5
20	5404.0
MINIMUM	3319.3
Pile N.	5
MAXIMUM	5404.0
Pile N.	20

\* 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	-1.8404E-03	-3.1825E-06	-400.76	-58.503	-342.59	-4.7737	-98.828	-1.2426	676.92	7.8279E+06	7.8279E+06
x( M)	0.0000	11.880	6.4800	0.0000	0.0000	9.3600	5.0400	12.240	18.000	0.0000	0.0000
2	-1.8404E-03	-3.7853E-06	-390.36	-69.263	-328.07	-5.3405	-94.066	-1.3882	1131.7	7.8279E+06	7.8279E+06
x( M)	0.0000	12.060	6.6600	0.0000	0.0000	9.5400	5.0400	12.240	18.000	0.0000	0.0000
3	-1.8404E-03	-4.2779E-06	-399.41	-83.781	-340.17	-6.3489	-98.115	-1.6625	1586.6	7.8279E+06	7.8279E+06
x( M)	0.0000	12.060	6.4800	0.0000	0.0000	9.3600	5.0400	12.240	18.000	0.0000	0.0000



<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>				
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>					
<b>COMMESSA</b> <b>IF28</b>	<b>LOTTO</b> <b>01</b>	<b>CODIFICA</b> <b>E ZZ CL</b>	<b>DOCUMENTO</b> <b>VI0403 001</b>	<b>REV.</b> <b>B</b>	<b>FOGLIO</b> <b>246 di 354</b>

\*\*\*\*\* 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
47948.6	-4220.31	641.508	-1906.87	6010.77	59515.1

\* 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
1.48429E-03	-1.19784E-03	1.56881E-04	-5.09422E-06	6.45556E-06	9.02560E-05

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	8.1696E-04	-1.2437E-03	1.2249E-04	-5.0942E-06	6.4556E-06	9.0256E-05
Pile N.	17	17	1	1	1	1
MAXIMUM	2.1516E-03	-1.1520E-03	1.9127E-04	-5.0942E-06	6.4556E-06	9.0256E-05
Pile N.	4	1	4	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	1339.4	-279.70	21.274	-1.7865	-134.53	-685.42
Pile N.	17	20	9	1	4	20
MAXIMUM	3361.7	-176.83	49.358	-1.7865	-60.961	-469.12
Pile N.	4	6	4	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	8.1696E-04	-1.2437E-03	1.2249E-04	-5.0942E-06	6.4556E-06	9.0256E-05
Pile N.	17	17	1	1	1	1
MAXIMUM	2.1516E-03	-1.1520E-03	1.9127E-04	-5.0942E-06	6.4556E-06	9.0256E-05
Pile N.	4	1	4	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	1339.4	-279.70	21.274	-1.7865	-134.53	-685.42
Pile N.	17	20	9	1	4	20
MAXIMUM	3361.7	-176.83	49.358	-1.7865	-60.961	-469.12
Pile N.	4	6	4	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.	-1.2437E-03	-5.2410E-06	-308.97	-134.53	-279.73	-10.670	-82.536	-2.7852	757.93
Pile N.	17	12	20	4	20	4	20	4	17
Max.	3.6484E-05	1.9127E-04	685.42	49.020	66.809	49.363	17.095	14.354	3937.9
Pile N.	14	4	20	4	20	4	20	4	20

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
47328.6	-7759.78	641.508	-1954.19	6010.77	82743.9

\* 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
1.49195E-03	-2.12660E-03	1.57904E-04	-5.25141E-06	6.47044E-06	1.37507E-04

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	5.0554E-04	-2.1739E-03	1.2246E-04	-5.2514E-06	6.4704E-06	1.3751E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	2.4783E-03	-2.0793E-03	1.9335E-04	-5.2514E-06	6.4704E-06	1.3751E-04
Pile N.	4	1	4	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	830.96	-502.63	21.081	-1.8416	-135.71	-1272.8
Pile N.	17	20	9	1	4	20

APPALTATORE:

Consorzio

Soci



ITINERARIO NAPOLI – BARI

PROGETTAZIONE:

Mandatario

Mandanti



RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

PROGETTO ESECUTIVO

RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

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MAXIMUM 3721.3 -329.75 49.583 -1.8416 -60.584 -918.81  
Pile N. 4 6 4 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	5.0554E-04	-2.1739E-03	1.2246E-04	-5.2514E-06	6.4704E-06	1.3751E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	2.4783E-03	-2.0793E-03	1.9335E-04	-5.2514E-06	6.4704E-06	1.3751E-04
Pile N.	4	1	4	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	830.96	-502.63	21.081	-1.8416	-135.71	-1272.8
Pile N.	17	20	9	1	4	20
MAXIMUM	3721.3	-329.75	49.583	-1.8416	-60.584	-918.81
Pile N.	4	6	4	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.	-2.1739E-03	-5.2966E-06	-543.75	-135.71	-502.69	-10.788	-149.31	-2.8185	470.22
Pile N.	17	12	20	4	20	4	20	4	17
Max.	6.4731E-05	1.9335E-04	1272.8	49.549	117.86	49.588	30.348	14.552	5896.4
Pile N.	14	4	20	4	20	4	20	4	20

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
45535.4	-7032.73	551.294	-1501.35	5505.41	65864.9

\* 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
1.41529E-03	-1.87577E-03	1.36538E-04	-3.93126E-06	5.82612E-06	1.09397E-04

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	6.2442E-04	-1.9111E-03	1.1000E-04	-3.9313E-06	5.8261E-06	1.0940E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	2.2062E-03	-1.8404E-03	1.6307E-04	-3.9313E-06	5.8261E-06	1.0940E-04
Pile N.	4	1	4	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	1025.0	-452.63	18.966	-1.3787	-113.15	-1165.1
Pile N.	17	20	9	1	4	20
MAXIMUM	3421.7	-300.03	41.602	-1.3787	-54.438	-854.89
Pile N.	4	6	4	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	6.2442E-04	-1.9111E-03	1.1000E-04	-3.9313E-06	5.8261E-06	1.0940E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	2.2062E-03	-1.8404E-03	1.6307E-04	-3.9313E-06	5.8261E-06	1.0940E-04
Pile N.	4	1	4	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	1025.0	-452.63	18.966	-1.3787	-113.15	-1165.1
Pile N.	17	20	9	1	4	20
MAXIMUM	3421.7	-300.03	41.602	-1.3787	-54.438	-854.89
Pile N.	4	6	4	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.	-1.9112E-03	-4.4551E-06	-480.06	-113.15	-452.67	-9.0786	-133.71	-2.3687	580.05
Pile N.	17	12	20	4	20	4	20	4	17
Max.	5.7291E-05	1.6307E-04	1165.1	41.712	104.19	41.606	26.905	12.186	5404.0
Pile N.	14	4	20	4	20	4	20	4	20

LOAD CASE : 4

\* TABLE L \* COMPUTATION ON PILE CAP

APPALTATORE:

Consorzio

Soci



ITINERARIO NAPOLI – BARI

PROGETTAZIONE:

Mandataria

Mandanti



RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

PROGETTO ESECUTIVO

RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

COMMESSA IF28	LOTTO 01	CODIFICA E Z CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 248 di 354
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\* 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
48460.4	-7435.37	877.148	-2574.63	10542.0	76048.5

\* 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
1.52489E-03	-2.02384E-03	2.22418E-04	-6.90942E-06	1.09212E-05	1.27849E-04

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	5.6362E-04	-2.0860E-03	1.7578E-04	-6.9094E-06	1.0921E-05	1.2785E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	2.4862E-03	-1.9617E-03	2.6906E-04	-6.9094E-06	1.0921E-05	1.2785E-04
Pile N.	4	1	4	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	925.78	-485.60	29.184	-2.4231	-181.50	-1236.9
Pile N.	17	20	9	1	4	20
MAXIMUM	3729.9	-314.48	67.468	-2.4231	-81.279	-879.87
Pile N.	4	6	4	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	5.6362E-04	-2.0860E-03	1.7578E-04	-6.9094E-06	1.0921E-05	1.2785E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	2.4862E-03	-1.9617E-03	2.6906E-04	-6.9094E-06	1.0921E-05	1.2785E-04
Pile N.	4	1	4	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	925.78	-485.60	29.184	-2.4231	-181.50	-1236.9
Pile N.	17	20	9	1	4	20
MAXIMUM	3729.9	-314.48	67.468	-2.4231	-81.279	-879.87
Pile N.	4	6	4	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.	-2.0860E-03	-7.3166E-06	-522.16	-181.50	-485.65	-14.915	-143.99	-3.8827	523.88
Pile N.	17	12	20	4	20	4	4	4	17
Max.	6.1955E-05	2.6906E-04	1236.9	68.537	113.19	67.475	29.173	19.824	5761.0
Pile N.	14	4	20	4	20	4	20	4	20

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
43281.8	-5422.16	716.464	-1787.77	7579.56	50905.1

\* 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
1.32419E-03	-1.42848E-03	1.77269E-04	-4.63536E-06	7.62719E-06	8.01755E-05

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	7.1436E-04	-1.4702E-03	1.4598E-04	-4.6354E-06	7.6272E-06	8.0176E-05
Pile N.	17	17	1	1	1	1
MAXIMUM	1.9340E-03	-1.3868E-03	2.0856E-04	-4.6354E-06	7.6272E-06	8.0176E-05
Pile N.	4	1	4	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	1171.9	-352.26	25.343	-1.6256	-144.28	-912.51
Pile N.	17	20	9	1	4	20
MAXIMUM	3122.2	-230.01	53.247	-1.6256	-72.784	-658.53
Pile N.	4	6	4	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	7.1436E-04	-1.4702E-03	1.4598E-04	-4.6354E-06	7.6272E-06	8.0176E-05
Pile N.	17	17	1	1	1	1
MAXIMUM	1.9340E-03	-1.3868E-03	2.0856E-04	-4.6354E-06	7.6272E-06	8.0176E-05
Pile N.	4	1	4	1	1	1



<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	

\* 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	1171.9	-352.26	25.343	-1.6256	-144.28	-912.51
Pile N.	17	20	9	1	4	20
MAXIMUM	3122.2	-230.01	53.247	-1.6256	-72.784	-658.53
Pile N.	4	6	4	1	9	6

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
Min.	-1.4702E-03	-5.7106E-06	-369.68	-144.28	-352.30	-11.601	-103.45	-3.0247	663.14
Pile N.	17	11	20	4	20	4	20	4	17
Max.	4.3962E-05	2.0856E-04	912.51	53.315	80.219	53.253	20.738	15.532	4451.2
Pile N.	14	4	20	4	20	4	20	4	20

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
48724.4	-4544.72	877.148	-2550.97	10542.0	57456.7

\* 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
1.50968E-03	-1.26009E-03	2.20550E-04	-6.86555E-06	1.06990E-05	8.94665E-05

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	8.0949E-04	-1.3279E-03	1.7421E-04	-6.8655E-06	1.0699E-05	8.9466E-05
Pile N.	17	17	1	1	1	1
MAXIMUM	2.2099E-03	-1.2043E-03	2.6689E-04	-6.8655E-06	1.0699E-05	8.9466E-05
Pile N.	4	1	4	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	1327.2	-303.53	29.227	-2.4077	-181.11	-757.14
Pile N.	17	20	9	1	4	20
MAXIMUM	3425.8	-189.54	67.433	-2.4077	-81.371	-512.18
Pile N.	4	6	4	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	8.0949E-04	-1.3279E-03	1.7421E-04	-6.8655E-06	1.0699E-05	8.9466E-05
Pile N.	17	17	1	1	1	1
MAXIMUM	2.2099E-03	-1.2043E-03	2.6689E-04	-6.8655E-06	1.0699E-05	8.9466E-05
Pile N.	4	1	4	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	1327.2	-303.53	29.227	-2.4077	-181.11	-757.14
Pile N.	17	20	9	1	4	20
MAXIMUM	3425.8	-189.54	67.433	-2.4077	-81.371	-512.18
Pile N.	4	6	4	1	9	6

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2
Min.	-1.3279E-03	-7.2698E-06	-330.62	-181.11	-303.56	-14.802	-89.450	-3.8526	751.03
Pile N.	17	12	20	4	20	4	20	4	17
Max.	3.8913E-05	2.6689E-04	757.14	68.034	71.454	67.440	18.352	19.662	4167.8
Pile N.	14	4	20	4	20	4	20	4	20

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
48724.4	-4544.72	877.148	-2550.97	10542.0	57457.9

\* 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
1.50968E-03	-1.26009E-03	2.20550E-04	-6.86554E-06	1.06990E-05	8.94682E-05

\* PILE TOP DISPLACEMENTS, GLOBAL \*

DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
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<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>				
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>					
COMMESSA <b>IF28</b>	LOTTO <b>01</b>	CODIFICA <b>E ZZ CL</b>	DOCUMENTO <b>VI0403 001</b>	REV. <b>B</b>	FOGLIO <b>250 di 354</b>

	*****	*****	*****	*****	*****	*****
MINIMUM	8.0948E-04	-1.3279E-03	1.7421E-04	-6.8655E-06	1.0699E-05	8.9468E-05
Pile N.	17	17	1	1	1	1
MAXIMUM	2.2099E-03	-1.2043E-03	2.6689E-04	-6.8655E-06	1.0699E-05	8.9468E-05
Pile N.	4	1	4	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	1327.2	-303.53	29.227	-2.4077	-181.11	-757.14
Pile N.	17	20	9	1	4	20
MAXIMUM	3425.8	-189.54	67.433	-2.4077	-81.371	-512.18
Pile N.	4	6	4	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	8.0948E-04	-1.3279E-03	1.7421E-04	-6.8655E-06	1.0699E-05	8.9468E-05
Pile N.	17	17	1	1	1	1
MAXIMUM	2.2099E-03	-1.2043E-03	2.6689E-04	-6.8655E-06	1.0699E-05	8.9468E-05
Pile N.	4	1	4	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	1327.2	-303.53	29.227	-2.4077	-181.11	-757.14
Pile N.	17	20	9	1	4	20
MAXIMUM	3425.8	-189.54	67.433	-2.4077	-81.371	-512.18
Pile N.	4	6	4	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.	-1.3279E-03	-7.2698E-06	-330.62	-181.11	-303.56	-14.802	-89.450	-3.8526	751.03
Pile N.	17	12	20	4	20	4	20	4	17
Max.	3.8913E-05	2.6689E-04	757.14	68.034	71.454	67.440	18.352	19.662	4167.8
Pile N.	14	4	20	4	20	4	20	4	20

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
45535.4	-7032.73	551.294	-1501.35	5505.41	65864.9

\* 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
1.41529E-03	-1.87577E-03	1.36538E-04	-3.93126E-06	5.82612E-06	1.09397E-04

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	6.2442E-04	-1.9111E-03	1.1000E-04	-3.9313E-06	5.8261E-06	1.0940E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	2.2062E-03	-1.8404E-03	1.6307E-04	-3.9313E-06	5.8261E-06	1.0940E-04
Pile N.	4	1	4	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	1025.0	-452.63	18.966	-1.3787	-113.15	-1165.1
Pile N.	17	20	9	1	4	20
MAXIMUM	3421.7	-300.03	41.602	-1.3787	-54.438	-854.89
Pile N.	4	6	4	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	6.2442E-04	-1.9111E-03	1.1000E-04	-3.9313E-06	5.8261E-06	1.0940E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	2.2062E-03	-1.8404E-03	1.6307E-04	-3.9313E-06	5.8261E-06	1.0940E-04
Pile N.	4	1	4	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	1025.0	-452.63	18.966	-1.3787	-113.15	-1165.1
Pile N.	17	20	9	1	4	20
MAXIMUM	3421.7	-300.03	41.602	-1.3787	-54.438	-854.89
Pile N.	4	6	4	1	9	6

\* EFFECTS FOR LATERALLY LOADED PILE \*

PILE	DISPL.	DISPL.	MOMENT	MOMENT	SHEAR	SHEAR	SOIL REACT	SOIL REACT	TOTAL
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## APPALTATORE:

Consorzio

Soci



## ITINERARIO NAPOLI – BARI

## PROGETTAZIONE:

Mandataria

Mandanti

RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

## PROGETTO ESECUTIVO

## RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

COMMESSA  
IF28LOTTO  
01CODIFICA  
E ZZ CLDOCUMENTO  
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BFOGLIO  
251 di  
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	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
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
Min.	-1.9112E-03	-4.4551E-06	-480.06	-113.15	-452.67	-9.0786	-133.71	-2.3687	580.05
Pile N.	17	12	20	4	20	4	20	4	17
Max.	5.7291E-05	1.6307E-04	1165.1	41.712	104.19	41.606	26.905	12.186	5404.0
Pile N.	14	4	20	4	20	4	20	4	20

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
43281.8	-5422.16	716.464	-1787.78	7579.56	50903.9

\* 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
1.32419E-03	-1.42847E-03	1.77269E-04	-4.63536E-06	7.62713E-06	8.01740E-05

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
MINIMUM	7.1437E-04	-1.4702E-03	1.4598E-04	-4.6354E-06	7.6271E-06	8.0174E-05
Pile N.	17	17	1	1	1	1
MAXIMUM	1.9340E-03	-1.3868E-03	2.0856E-04	-4.6354E-06	7.6271E-06	8.0174E-05
Pile N.	4	1	4	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	1171.9	-352.26	25.343	-1.6256	-144.28	-912.51
Pile N.	17	20	9	1	4	20
MAXIMUM	3122.2	-230.01	53.247	-1.6256	-72.784	-658.54
Pile N.	4	6	4	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	7.1437E-04	-1.4702E-03	1.4598E-04	-4.6354E-06	7.6271E-06	8.0174E-05
Pile N.	17	17	1	1	1	1
MAXIMUM	1.9340E-03	-1.3868E-03	2.0856E-04	-4.6354E-06	7.6271E-06	8.0174E-05
Pile N.	4	1	4	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	1171.9	-352.26	25.343	-1.6256	-144.28	-912.51
Pile N.	17	20	9	1	4	20
MAXIMUM	3122.2	-230.01	53.247	-1.6256	-72.784	-658.54
Pile N.	4	6	4	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 KN	SHEAR z-Dir KN	SOIL REACT y-Dir KN/ M	SOIL REACT z-Dir KN/ M	TOTAL STRESS KN/ M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
Min.	-1.4702E-03	-5.7106E-06	-369.68	-144.28	-352.29	-11.601	-103.45	-3.0247	663.15
Pile N.	17	11	20	4	20	4	20	4	17
Max.	4.3962E-05	2.0856E-04	912.51	53.315	80.219	53.253	20.737	15.532	4451.2
Pile N.	14	4	20	4	20	4	20	4	20

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
47328.6	-7759.78	641.508	-1954.19	6010.77	82743.9

\* 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
1.49195E-03	-2.12660E-03	1.57904E-04	-5.25141E-06	6.47044E-06	1.37507E-04

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
MINIMUM	5.0554E-04	-2.1739E-03	1.2246E-04	-5.2514E-06	6.4704E-06	1.3751E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	2.4783E-03	-2.0793E-03	1.9335E-04	-5.2514E-06	6.4704E-06	1.3751E-04
Pile N.	4	1	4	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	830.96	-502.63	21.081	-1.8416	-135.71	-1272.8
Pile N.	17	20	9	1	4	20

APPALTATORE:

Consorzio

Soci



ITINERARIO NAPOLI – BARI

PROGETTAZIONE:

Mandatario

Mandanti



RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

PROGETTO ESECUTIVO

RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 252 di 354
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MAXIMUM	3721.3	-329.75	49.583	-1.8416	-60.584	-918.81
Pile N.	4	6	4	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	5.0554E-04	-2.1739E-03	1.2246E-04	-5.2514E-06	6.4704E-06	1.3751E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	2.4783E-03	-2.0793E-03	1.9335E-04	-5.2514E-06	6.4704E-06	1.3751E-04
Pile N.	4	1	4	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	830.96	-502.63	21.081	-1.8416	-135.71	-1272.8
Pile N.	17	20	9	1	4	20
MAXIMUM	3721.3	-329.75	49.583	-1.8416	-60.584	-918.81
Pile N.	4	6	4	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.	-2.1739E-03	-5.2966E-06	-543.75	-135.71	-502.69	-10.788	-149.31	-2.8185	470.22
Pile N.	17	12	20	4	20	4	4	4	17
Max.	6.4731E-05	1.9335E-04	1272.8	49.549	117.86	49.588	30.348	14.552	5896.4
Pile N.	14	4	20	4	20	4	20	4	20

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
48460.4	-7435.37	877.148	-2574.63	10542.0	76048.5

\* 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
1.52489E-03	-2.02384E-03	2.22418E-04	-6.90942E-06	1.09212E-05	1.27849E-04

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	5.6362E-04	-2.0860E-03	1.7578E-04	-6.9094E-06	1.0921E-05	1.2785E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	2.4862E-03	-1.9617E-03	2.6906E-04	-6.9094E-06	1.0921E-05	1.2785E-04
Pile N.	4	1	4	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	925.78	-485.60	29.184	-2.4231	-181.50	-1236.9
Pile N.	17	20	9	1	4	20
MAXIMUM	3729.9	-314.48	67.468	-2.4231	-81.279	-879.87
Pile N.	4	6	4	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	5.6362E-04	-2.0860E-03	1.7578E-04	-6.9094E-06	1.0921E-05	1.2785E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	2.4862E-03	-1.9617E-03	2.6906E-04	-6.9094E-06	1.0921E-05	1.2785E-04
Pile N.	4	1	4	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	925.78	-485.60	29.184	-2.4231	-181.50	-1236.9
Pile N.	17	20	9	1	4	20
MAXIMUM	3729.9	-314.48	67.468	-2.4231	-81.279	-879.87
Pile N.	4	6	4	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.	-2.0860E-03	-7.3166E-06	-522.16	-181.50	-485.65	-14.915	-143.99	-3.8827	523.88
Pile N.	17	12	20	4	20	4	4	4	17
Max.	6.1955E-05	2.6906E-04	1236.9	68.537	113.19	67.475	29.173	19.824	5761.0
Pile N.	14	4	20	4	20	4	20	4	20

LOAD CASE : 12

\* TABLE L \* COMPUTATION ON PILE CAP

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	COMMESSA <b>IF28</b> LOTTO <b>01</b> CODIFICA <b>E ZZ CL</b> DOCUMENTO <b>VI0403 001</b> REV. <b>B</b> FOGLIO <b>253 di 354</b>

\* 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
45535.4	-7032.73	551.294	-1501.35	5505.41	65866.8

\* 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
1.41529E-03	-1.87578E-03	1.36539E-04	-3.93126E-06	5.82612E-06	1.09400E-04

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	6.2440E-04	-1.9112E-03	1.1000E-04	-3.9313E-06	5.8261E-06	1.0940E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	2.2062E-03	-1.8404E-03	1.6307E-04	-3.9313E-06	5.8261E-06	1.0940E-04
Pile N.	4	1	4	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	1025.0	-452.63	18.966	-1.3787	-113.15	-1165.1
Pile N.	17	20	9	1	4	20
MAXIMUM	3421.8	-300.03	41.602	-1.3787	-54.438	-854.89
Pile N.	4	6	4	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	6.2440E-04	-1.9112E-03	1.1000E-04	-3.9313E-06	5.8261E-06	1.0940E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	2.2062E-03	-1.8404E-03	1.6307E-04	-3.9313E-06	5.8261E-06	1.0940E-04
Pile N.	4	1	4	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	1025.0	-452.63	18.966	-1.3787	-113.15	-1165.1
Pile N.	17	20	9	1	4	20
MAXIMUM	3421.8	-300.03	41.602	-1.3787	-54.438	-854.89
Pile N.	4	6	4	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.	-1.9112E-03	-4.4551E-06	-480.06	-113.15	-452.67	-9.0786	-133.71	-2.3687	580.04
Pile N.	17	12	20	4	20	4	20	4	17
Max.	5.7291E-05	1.6307E-04	1165.1	41.712	104.19	41.606	26.905	12.186	5404.0
Pile N.	14	4	20	4	20	4	20	4	20

### 13.4 SPALLA B SLU – SLV

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: July 08, 2020    Time: 10:47:05

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

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	

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

LOAD CASE : 1  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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	0.5965	1.0000
2	0.5555	1.0000
3	0.5883	1.0000
4	0.8661	1.0000
5	0.4986	1.0000
6	0.4627	1.0000
7	0.4951	1.0000
8	0.7986	1.0000
9	0.4963	1.0000
10	0.4606	1.0000
11	0.4930	1.0000
12	0.7977	1.0000
13	0.4973	1.0000
14	0.4615	1.0000
15	0.4940	1.0000
16	0.7977	1.0000
17	0.5845	1.0000
18	0.5428	1.0000
19	0.5764	1.0000
20	0.8579	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
64995.0	-3790.08	951.681
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-2818.60	8975.77	74380.9

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
2.11681E-03	-1.11387E-03	2.10419E-04
ANGLE ROT. X, RAD	ANGLE ROT. Y, RAD	ANGLE ROT. Z, RAD
-6.86679E-06	1.08072E-05	1.27894E-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	1.3508E-03	-1.0521E-03	1.6407E-04	-6.8668E-06	1.0807E-05	1.2789E-04
2	1.9263E-03	-1.0521E-03	1.9497E-04	-6.8668E-06	1.0807E-05	1.2789E-04
3	2.5018E-03	-1.0521E-03	2.2587E-04	-6.8668E-06	1.0807E-05	1.2789E-04
4	3.0774E-03	-1.0521E-03	2.5677E-04	-6.8668E-06	1.0807E-05	1.2789E-04
5	1.3022E-03	-1.0830E-03	1.6407E-04	-6.8668E-06	1.0807E-05	1.2789E-04
6	1.8777E-03	-1.0830E-03	1.9497E-04	-6.8668E-06	1.0807E-05	1.2789E-04
7	2.4532E-03	-1.0830E-03	2.2587E-04	-6.8668E-06	1.0807E-05	1.2789E-04
8	3.0287E-03	-1.0830E-03	2.5677E-04	-6.8668E-06	1.0807E-05	1.2789E-04
9	1.2535E-03	-1.1139E-03	1.6407E-04	-6.8668E-06	1.0807E-05	1.2789E-04
10	1.8291E-03	-1.1139E-03	1.9497E-04	-6.8668E-06	1.0807E-05	1.2789E-04
11	2.4046E-03	-1.1139E-03	2.2587E-04	-6.8668E-06	1.0807E-05	1.2789E-04
12	2.9801E-03	-1.1139E-03	2.5677E-04	-6.8668E-06	1.0807E-05	1.2789E-04
13	1.2049E-03	-1.1448E-03	1.6407E-04	-6.8668E-06	1.0807E-05	1.2789E-04
14	1.7804E-03	-1.1448E-03	1.9497E-04	-6.8668E-06	1.0807E-05	1.2789E-04
15	2.3559E-03	-1.1448E-03	2.2587E-04	-6.8668E-06	1.0807E-05	1.2789E-04
16	2.9315E-03	-1.1448E-03	2.5677E-04	-6.8668E-06	1.0807E-05	1.2789E-04
17	1.1563E-03	-1.1757E-03	1.6407E-04	-6.8668E-06	1.0807E-05	1.2789E-04
18	1.7318E-03	-1.1757E-03	1.9497E-04	-6.8668E-06	1.0807E-05	1.2789E-04
19	2.3073E-03	-1.1757E-03	2.2587E-04	-6.8668E-06	1.0807E-05	1.2789E-04
20	2.8828E-03	-1.1757E-03	2.5677E-04	-6.8668E-06	1.0807E-05	1.2789E-04

<b>APPALTATORE:</b> Consorzio  Soci  		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria  Mandanti  							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>							COMMESSA <b>IF28</b>

MINIMUM	1.1563E-03	-1.1757E-03	1.6407E-04	-6.8668E-06	1.0807E-05	1.2789E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	3.0774E-03	-1.0521E-03	2.5677E-04	-6.8668E-06	1.0807E-05	1.2789E-04
Pile N.	4	1	4	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	2219.3	-174.71	34.867	-2.4210	-93.949	-369.84
2	3126.1	-167.35	41.539	-2.4210	-116.72	-356.55
3	3762.2	-173.06	50.985	-2.4210	-144.80	-367.33
4	4398.3	-217.72	72.190	-2.4210	-194.44	-446.31
5	2139.6	-164.62	31.710	-2.4210	-87.856	-361.25
6	3072.3	-157.38	37.770	-2.4210	-109.29	-347.65
7	3708.4	-163.66	46.641	-2.4210	-136.32	-359.93
8	4344.5	-216.82	69.177	-2.4210	-189.04	-456.54
9	2059.9	-171.61	31.611	-2.4210	-87.649	-384.46
10	3003.0	-164.12	37.654	-2.4210	-109.04	-370.34
11	3654.7	-170.63	46.502	-2.4210	-136.02	-383.10
12	4290.8	-225.99	69.083	-2.4210	-188.84	-483.95
13	1980.2	-179.18	31.612	-2.4210	-87.630	-408.71
14	2923.3	-171.41	37.654	-2.4210	-109.02	-394.04
15	3600.9	-178.17	46.501	-2.4210	-135.99	-407.29
16	4237.0	-235.25	69.018	-2.4210	-188.68	-511.48
17	1900.5	-204.72	34.394	-2.4210	-92.984	-466.84
18	2843.6	-195.98	40.913	-2.4210	-115.42	-450.78
19	3547.2	-202.71	50.275	-2.4210	-143.33	-463.59
20	4183.3	-254.98	71.585	-2.4210	-193.20	-556.99
MINIMUM	1900.5	-254.98	31.611	-2.4210	-194.44	-556.99
Pile N.	17	20	9	1	4	20
MAXIMUM	4398.3	-157.38	72.190	-2.4210	-87.630	-347.65
Pile N.	4	6	4	1	13	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	1.3508E-03	-1.0521E-03	1.6407E-04	-6.8668E-06	1.0807E-05	1.2789E-04
2	1.9263E-03	-1.0521E-03	1.9497E-04	-6.8668E-06	1.0807E-05	1.2789E-04
3	2.5018E-03	-1.0521E-03	2.2587E-04	-6.8668E-06	1.0807E-05	1.2789E-04
4	3.0774E-03	-1.0521E-03	2.5677E-04	-6.8668E-06	1.0807E-05	1.2789E-04
5	1.3022E-03	-1.0830E-03	1.6407E-04	-6.8668E-06	1.0807E-05	1.2789E-04
6	1.8777E-03	-1.0830E-03	1.9497E-04	-6.8668E-06	1.0807E-05	1.2789E-04
7	2.4532E-03	-1.0830E-03	2.2587E-04	-6.8668E-06	1.0807E-05	1.2789E-04
8	3.0287E-03	-1.0830E-03	2.5677E-04	-6.8668E-06	1.0807E-05	1.2789E-04
9	1.2535E-03	-1.1139E-03	1.6407E-04	-6.8668E-06	1.0807E-05	1.2789E-04
10	1.8291E-03	-1.1139E-03	1.9497E-04	-6.8668E-06	1.0807E-05	1.2789E-04
11	2.4046E-03	-1.1139E-03	2.2587E-04	-6.8668E-06	1.0807E-05	1.2789E-04
12	2.9801E-03	-1.1139E-03	2.5677E-04	-6.8668E-06	1.0807E-05	1.2789E-04
13	1.2049E-03	-1.1448E-03	1.6407E-04	-6.8668E-06	1.0807E-05	1.2789E-04
14	1.7804E-03	-1.1448E-03	1.9497E-04	-6.8668E-06	1.0807E-05	1.2789E-04
15	2.3559E-03	-1.1448E-03	2.2587E-04	-6.8668E-06	1.0807E-05	1.2789E-04
16	2.9315E-03	-1.1448E-03	2.5677E-04	-6.8668E-06	1.0807E-05	1.2789E-04
17	1.1563E-03	-1.1757E-03	1.6407E-04	-6.8668E-06	1.0807E-05	1.2789E-04
18	1.7318E-03	-1.1757E-03	1.9497E-04	-6.8668E-06	1.0807E-05	1.2789E-04
19	2.3073E-03	-1.1757E-03	2.2587E-04	-6.8668E-06	1.0807E-05	1.2789E-04
20	2.8828E-03	-1.1757E-03	2.5677E-04	-6.8668E-06	1.0807E-05	1.2789E-04
MINIMUM	1.1563E-03	-1.1757E-03	1.6407E-04	-6.8668E-06	1.0807E-05	1.2789E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	3.0774E-03	-1.0521E-03	2.5677E-04	-6.8668E-06	1.0807E-05	1.2789E-04
Pile N.	4	1	4	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	2219.3	-174.71	34.867	-2.4210	-93.949	-369.84
2	3126.1	-167.35	41.539	-2.4210	-116.72	-356.55
3	3762.2	-173.06	50.985	-2.4210	-144.80	-367.33
4	4398.3	-217.72	72.190	-2.4210	-194.44	-446.31
5	2139.6	-164.62	31.710	-2.4210	-87.856	-361.25
6	3072.3	-157.38	37.770	-2.4210	-109.29	-347.65
7	3708.4	-163.66	46.641	-2.4210	-136.32	-359.93
8	4344.5	-216.82	69.177	-2.4210	-189.04	-456.54
9	2059.9	-171.61	31.611	-2.4210	-87.649	-384.46
10	3003.0	-164.12	37.654	-2.4210	-109.04	-370.34
11	3654.7	-170.63	46.502	-2.4210	-136.02	-383.10
12	4290.8	-225.99	69.083	-2.4210	-188.84	-483.95
13	1980.2	-179.18	31.612	-2.4210	-87.630	-408.71
14	2923.3	-171.41	37.654	-2.4210	-109.02	-394.04





<b>APPALTATORE:</b> Consorzio <b>Soci</b>   		<b>ITINERARIO NAPOLI – BARI</b>					
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   		<b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>		<b>COMMESSA</b> <b>IF28</b>	<b>LOTTO</b> <b>01</b>	<b>CODIFICA</b> <b>E ZZ CL</b>	<b>DOCUMENTO</b> <b>VI0403 001</b>	<b>REV.</b> <b>B</b>	<b>FOGLIO</b> <b>257 di 354</b>

Min. -1.1757E-03 -5.7648E-06 -362.92 -194.44 -255.00 -22.848 -130.24 -6.5930 1075.5 7.8279E+06 7.8279E+06  
 Pile N. 17 11 20 4 20 4 20 4 17 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
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2	KN- M**2	KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	2.3129E+05	1.6407E-04	369.84	47.489	70.297	34.870	19.211	17.669	2407.5	7.8279E+06	7.8279E+06
x( M)	10.080	0.0000	0.0000	6.1200	8.1000	0.0000	10.440	5.0400	0.0000	0.0000	0.0000
2	2.3611E-05	1.9497E-04	356.55	55.768	67.745	41.544	18.493	20.664	2901.3	7.8279E+06	7.8279E+06
x( M)	10.260	0.0000	0.0000	6.1200	8.2800	0.0000	10.620	5.0400	0.0000	0.0000	0.0000
3	2.3231E-05	2.2587E-04	367.33	66.403	69.866	50.991	19.078	25.422	3320.6	7.8279E+06	7.8279E+06
x( M)	10.080	0.0000	0.0000	6.1200	8.1000	0.0000	10.620	5.0400	0.0000	0.0000	0.0000
4	2.1299E-05	2.5677E-04	446.31	85.906	85.000	72.199	24.129	37.576	3958.2	7.8279E+06	7.8279E+06
x( M)	9.5400	0.0000	0.0000	6.3000	7.7400	0.0000	9.9000	5.0400	0.0000	0.0000	0.0000
5	2.5158E-05	1.6407E-04	361.25	44.750	66.096	31.712	18.072	15.602	2332.8	7.8279E+06	7.8279E+06
x( M)	10.440	0.0000	0.0000	6.1200	8.2800	0.0000	10.980	5.0400	0.0000	0.0000	0.0000
6	2.5784E-05	1.9497E-04	347.65	52.456	63.562	37.774	17.426	18.118	2838.4	7.8279E+06	7.8279E+06
x( M)	10.620	0.0000	0.0000	6.3000	8.4600	0.0000	10.980	5.0400	0.0000	0.0000	0.0000
7	2.5238E-05	2.2587E-04	359.93	62.684	65.909	46.646	18.027	22.374	3260.1	7.8279E+06	7.8279E+06
x( M)	10.440	0.0000	0.0000	6.3000	8.2800	0.0000	10.980	5.0400	0.0000	0.0000	0.0000
8	2.2337E-05	2.5677E-04	456.54	83.735	84.315	69.187	23.669	35.116	3949.8	7.8279E+06	7.8279E+06
x( M)	9.7200	0.0000	0.0000	5.9400	7.9200	0.0000	10.080	5.0400	0.0000	0.0000	0.0000
9	2.5987E-05	1.6407E-04	384.46	44.656	67.969	31.613	18.648	15.265	2355.8	7.8279E+06	7.8279E+06
x( M)	10.440	0.0000	0.0000	6.1200	8.2800	0.0000	10.980	5.0400	0.0000	0.0000	0.0000
10	2.6647E-05	1.9497E-04	370.34	52.352	65.398	37.658	17.985	17.732	2864.5	7.8279E+06	7.8279E+06
x( M)	10.620	0.0000	0.0000	6.3000	8.4600	0.0000	11.160	5.0400	0.0000	0.0000	0.0000
11	2.6061E-05	2.2587E-04	383.10	62.563	67.780	46.507	18.604	21.913	3295.0	7.8279E+06	7.8279E+06
x( M)	10.440	0.0000	0.0000	6.3000	8.2800	0.0000	10.980	5.0400	0.0000	0.0000	0.0000
12	2.3033E-05	2.5677E-04	483.95	83.642	86.946	69.093	24.433	34.495	3995.9	7.8279E+06	7.8279E+06
x( M)	9.7200	0.0000	0.0000	5.9400	7.9200	0.0000	10.080	5.0400	0.0000	0.0000	0.0000
13	2.6754E-05	1.6407E-04	408.71	44.649	70.067	31.614	19.281	15.021	2382.1	7.8279E+06	7.8279E+06
x( M)	10.440	0.0000	0.0000	6.1200	8.4600	0.0000	10.980	5.0400	0.0000	0.0000	0.0000
14	2.7443E-05	1.9497E-04	394.04	52.349	67.435	37.657	18.599	17.453	2888.2	7.8279E+06	7.8279E+06
x( M)	10.620	0.0000	0.0000	6.3000	8.4600	0.0000	11.160	5.0400	0.0000	0.0000	0.0000
15	2.6835E-05	2.2587E-04	407.29	62.560	69.891	46.507	19.235	21.575	3333.6	7.8279E+06	7.8279E+06
x( M)	10.620	0.0000	0.0000	6.3000	8.4600	0.0000	10.980	5.0400	0.0000	0.0000	0.0000
16	2.3717E-05	2.5677E-04	511.48	83.563	89.601	69.027	25.209	33.935	4043.0	7.8279E+06	7.8279E+06
x( M)	9.7200	0.0000	0.0000	5.9400	7.9200	0.0000	10.080	5.0400	0.0000	0.0000	0.0000
17	2.6276E-05	1.6407E-04	466.84	47.075	78.547	34.396	21.634	16.466	2512.1	7.8279E+06	7.8279E+06
x( M)	10.260	0.0000	0.0000	6.1200	8.2800	0.0000	10.620	5.0400	0.0000	0.0000	0.0000
18	2.6841E-05	1.9497E-04	450.78	55.189	75.626	40.917	20.809	19.163	3013.6	7.8279E+06	7.8279E+06
x( M)	10.440	0.0000	0.0000	6.1200	8.2800	0.0000	10.800	5.0400	0.0000	0.0000	0.0000
19	2.6398E-05	2.2587E-04	463.59	65.758	78.041	50.281	21.483	23.543	3471.8	7.8279E+06	7.8279E+06
x( M)	10.260	0.0000	0.0000	6.1200	8.2800	0.0000	10.620	5.0400	0.0000	0.0000	0.0000
20	2.3991E-05	2.5677E-04	556.99	85.359	95.549	71.594	27.198	34.963	4146.5	7.8279E+06	7.8279E+06
x( M)	9.7200	0.0000	0.0000	5.9400	7.9200	0.0000	9.9000	5.0400	0.0000	0.0000	0.0000
Max.	2.7443E-05	2.5677E-04	556.99	85.906	95.549	72.199	27.198	37.576	4146.5	7.8279E+06	7.8279E+06
Pile N.	14	4	20	4	20	4	20	4	20	1	1

LOAD CASE : 2  
 CASE NAME : Load Case  
 LOAD TYPE : Special, Sp

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	0.5867	1.0000
2	0.5464	1.0000
3	0.5807	1.0000
4	0.8661	1.0000
5	0.4961	1.0000
6	0.4618	1.0000
7	0.4951	1.0000
8	0.8041	1.0000
9	0.4948	1.0000
10	0.4606	1.0000
11	0.4939	1.0000
12	0.8040	1.0000
13	0.4958	1.0000
14	0.4615	1.0000
15	0.4949	1.0000
16	0.8040	1.0000
17	0.5845	1.0000
18	0.5442	1.0000
19	0.5786	1.0000
20	0.8646	1.0000

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN 64721.6	HOR. LOAD Y, KN -10750.9	HOR. LOAD Z, KN 951.681
MOMENT X, KN- M -2887.21	MOMENT Y, KN- M 8951.88	MOMENT Z, KN- M 1.16252E+05

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL, M 2.22974E-03	HORIZONTAL Y, M -2.98237E-03	HORIZONTAL Z, M 2.33858E-04
ANGLE ROT. X, RAD -8.15220E-06	ANGLE ROT. Y, RAD 1.20575E-05	ANGLE ROT. Z, RAD 2.29848E-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	7.8679E-04	-2.9090E-03	1.7883E-04	-8.1522E-06	1.2057E-05	2.2985E-04
2	1.8211E-03	-2.9090E-03	2.1551E-04	-8.1522E-06	1.2057E-05	2.2985E-04
3	2.8554E-03	-2.9090E-03	2.5220E-04	-8.1522E-06	1.2057E-05	2.2985E-04
4	3.8897E-03	-2.9090E-03	2.8889E-04	-8.1522E-06	1.2057E-05	2.2985E-04
5	7.3253E-04	-2.9457E-03	1.7883E-04	-8.1522E-06	1.2057E-05	2.2985E-04
6	1.7668E-03	-2.9457E-03	2.1551E-04	-8.1522E-06	1.2057E-05	2.2985E-04
7	2.8012E-03	-2.9457E-03	2.5220E-04	-8.1522E-06	1.2057E-05	2.2985E-04
8	3.8355E-03	-2.9457E-03	2.8889E-04	-8.1522E-06	1.2057E-05	2.2985E-04
9	6.7827E-04	-2.9824E-03	1.7883E-04	-8.1522E-06	1.2057E-05	2.2985E-04
10	1.7126E-03	-2.9824E-03	2.1551E-04	-8.1522E-06	1.2057E-05	2.2985E-04
11	2.7469E-03	-2.9824E-03	2.5220E-04	-8.1522E-06	1.2057E-05	2.2985E-04
12	3.7812E-03	-2.9824E-03	2.8889E-04	-8.1522E-06	1.2057E-05	2.2985E-04
13	6.2401E-04	-3.0191E-03	1.7883E-04	-8.1522E-06	1.2057E-05	2.2985E-04
14	1.6583E-03	-3.0191E-03	2.1551E-04	-8.1522E-06	1.2057E-05	2.2985E-04
15	2.6926E-03	-3.0191E-03	2.5220E-04	-8.1522E-06	1.2057E-05	2.2985E-04
16	3.7270E-03	-3.0191E-03	2.8889E-04	-8.1522E-06	1.2057E-05	2.2985E-04
17	5.6975E-04	-3.0557E-03	1.7883E-04	-8.1522E-06	1.2057E-05	2.2985E-04
18	1.6041E-03	-3.0557E-03	2.1551E-04	-8.1522E-06	1.2057E-05	2.2985E-04
19	2.6384E-03	-3.0557E-03	2.5220E-04	-8.1522E-06	1.2057E-05	2.2985E-04
20	3.6727E-03	-3.0557E-03	2.8889E-04	-8.1522E-06	1.2057E-05	2.2985E-04
MINIMUM	5.6975E-04	-3.0557E-03	1.7883E-04	-8.1522E-06	1.2057E-05	2.2985E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	3.8897E-03	-2.9090E-03	2.8889E-04	-8.1522E-06	1.2057E-05	2.2985E-04
Pile N.	4	1	4	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	1295.0	-520.74	33.586	-2.8742	-90.429	-1344.1
2	2990.0	-497.55	40.541	-2.8742	-114.73	-1299.3
3	4153.0	-516.29	50.713	-2.8742	-145.50	-1337.6
4	5023.0	-670.51	76.115	-2.8742	-206.64	-1640.2
5	1206.1	-476.07	30.256	-2.8742	-83.650	-1263.9
6	2901.1	-454.54	36.566	-2.8742	-106.46	-1220.9
7	4093.0	-474.34	46.047	-2.8742	-135.89	-1262.7
8	5002.4	-640.70	71.730	-2.8742	-197.26	-1586.9
9	1117.2	-482.33	30.150	-2.8742	-83.394	-1285.9
10	2812.2	-460.53	36.438	-2.8742	-106.15	-1242.3
11	4033.0	-480.59	45.890	-2.8742	-135.51	-1284.8
12	4981.9	-649.96	71.607	-2.8742	-196.97	-1615.3
13	1028.3	-489.97	30.131	-2.8742	-83.316	-1310.8
14	2723.3	-467.86	36.413	-2.8742	-106.05	-1266.5
15	3973.1	-488.21	45.861	-2.8742	-135.39	-1309.6
16	4961.3	-659.27	71.493	-2.8742	-196.69	-1643.8
17	939.37	-550.54	33.270	-2.8742	-89.640	-1442.4
18	2634.4	-525.91	40.143	-2.8742	-113.72	-1394.6
19	3913.1	-545.82	50.240	-2.8742	-144.32	-1435.5
20	4940.8	-699.20	74.493	-2.8742	-202.24	-1728.7
MINIMUM	939.37	-699.20	30.131	-2.8742	-206.64	-1728.7
Pile N.	17	20	13	1	4	20
MAXIMUM	5023.0	-454.54	76.115	-2.8742	-83.316	-1220.9
Pile N.	4	6	4	1	13	6

THE PILE COORDINATE SYSTEM (LOCAL AXES)

<b>APPALTATORE:</b> Consorzio  Soci  		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria  Mandanti  							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>							COMMESSA <b>IF28</b>

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 \* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	7.8679E-04	-2.9090E-03	1.7883E-04	-8.1522E-06	1.2057E-05	2.2985E-04
2	1.8211E-03	-2.9090E-03	2.1551E-04	-8.1522E-06	1.2057E-05	2.2985E-04
3	2.8554E-03	-2.9090E-03	2.5220E-04	-8.1522E-06	1.2057E-05	2.2985E-04
4	3.8897E-03	-2.9090E-03	2.8889E-04	-8.1522E-06	1.2057E-05	2.2985E-04
5	7.3253E-04	-2.9457E-03	1.7883E-04	-8.1522E-06	1.2057E-05	2.2985E-04
6	1.7668E-03	-2.9457E-03	2.1551E-04	-8.1522E-06	1.2057E-05	2.2985E-04
7	2.8012E-03	-2.9457E-03	2.5220E-04	-8.1522E-06	1.2057E-05	2.2985E-04
8	3.8355E-03	-2.9457E-03	2.8889E-04	-8.1522E-06	1.2057E-05	2.2985E-04
9	6.7827E-04	-2.9824E-03	1.7883E-04	-8.1522E-06	1.2057E-05	2.2985E-04
10	1.7126E-03	-2.9824E-03	2.1551E-04	-8.1522E-06	1.2057E-05	2.2985E-04
11	2.7469E-03	-2.9824E-03	2.5220E-04	-8.1522E-06	1.2057E-05	2.2985E-04
12	3.7812E-03	-2.9824E-03	2.8889E-04	-8.1522E-06	1.2057E-05	2.2985E-04
13	6.2401E-04	-3.0191E-03	1.7883E-04	-8.1522E-06	1.2057E-05	2.2985E-04
14	1.6583E-03	-3.0191E-03	2.1551E-04	-8.1522E-06	1.2057E-05	2.2985E-04
15	2.6926E-03	-3.0191E-03	2.5220E-04	-8.1522E-06	1.2057E-05	2.2985E-04
16	3.7270E-03	-3.0191E-03	2.8889E-04	-8.1522E-06	1.2057E-05	2.2985E-04
17	5.6975E-04	-3.0557E-03	1.7883E-04	-8.1522E-06	1.2057E-05	2.2985E-04
18	1.6041E-03	-3.0557E-03	2.1551E-04	-8.1522E-06	1.2057E-05	2.2985E-04
19	2.6384E-03	-3.0557E-03	2.5220E-04	-8.1522E-06	1.2057E-05	2.2985E-04
20	3.6727E-03	-3.0557E-03	2.8889E-04	-8.1522E-06	1.2057E-05	2.2985E-04
MINIMUM	5.6975E-04	-3.0557E-03	1.7883E-04	-8.1522E-06	1.2057E-05	2.2985E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	3.8897E-03	-2.9090E-03	2.8889E-04	-8.1522E-06	1.2057E-05	2.2985E-04
Pile N.	4	1	4	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	1295.0	-520.74	33.586	-2.8742	-90.429	-1344.1
2	2990.0	-497.55	40.541	-2.8742	-114.73	-1299.3
3	4153.0	-516.29	50.713	-2.8742	-145.50	-1337.6
4	5023.0	-670.51	76.115	-2.8742	-206.64	-1640.2
5	1206.1	-476.07	30.256	-2.8742	-83.650	-1263.9
6	2901.1	-454.54	36.566	-2.8742	-106.46	-1220.9
7	4093.0	-474.34	46.047	-2.8742	-135.89	-1262.7
8	5002.4	-640.70	71.730	-2.8742	-197.26	-1586.9
9	1117.2	-482.33	30.150	-2.8742	-83.394	-1285.9
10	2812.2	-460.53	36.438	-2.8742	-106.15	-1242.3
11	4033.0	-480.59	45.890	-2.8742	-135.51	-1284.8
12	4981.9	-649.96	71.607	-2.8742	-196.97	-1615.3
13	1028.3	-489.97	30.131	-2.8742	-83.316	-1310.8
14	2723.3	-467.86	36.413	-2.8742	-106.05	-1266.5
15	3973.1	-488.21	45.861	-2.8742	-135.39	-1309.6
16	4961.3	-659.27	71.493	-2.8742	-196.69	-1643.8
17	939.37	-550.54	33.270	-2.8742	-89.640	-1442.4
18	2634.4	-525.91	40.143	-2.8742	-113.72	-1394.6
19	3913.1	-545.82	50.240	-2.8742	-144.32	-1435.5
20	4940.8	-699.20	74.493	-2.8742	-202.24	-1728.7
MINIMUM	939.37	-699.20	30.131	-2.8742	-206.64	-1728.7
Pile N.	17	20	13	1	4	20
MAXIMUM	5023.0	-454.54	76.115	-2.8742	-83.316	-1220.9
Pile N.	4	6	4	1	13	6

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

1	4798.6
2	5628.8
3	6410.9
4	7831.9
5	4505.3
6	5340.4
7	6149.1
8	7657.1
9	4521.3
10	5354.4
11	6181.3
12	7730.4
13	4545.8
14	5376.8
15	6221.9
16	7804.0
17	4893.3
18	5713.7
19	6568.7
20	8048.7
MINIMUM	4505.3
Pile N.	5
MAXIMUM	8048.7



<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>				
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>					
<b>COMMESSA</b> <b>IF28</b>	<b>LOTTO</b> <b>01</b>	<b>CODIFICA</b> <b>E ZZ CL</b>	<b>DOCUMENTO</b> <b>VI0403 001</b>	<b>REV.</b> <b>B</b>	<b>FOGLIO</b> <b>261 di 354</b>

15	7.3425E-05	2.5220E-04	1309.6	58.528	156.70	45.867	42.375	13.724	6221.9	7.8279E+06	7.8279E+06
x( M)	11.520	0.0000	0.0000	6.8400	9.1800	0.0000	11.880	5.0400	0.0000	0.0000	0.0000
16	5.8702E-05	2.8889E-04	1643.8	81.884	212.79	71.505	59.218	23.467	7804.0	7.8279E+06	7.8279E+06
x( M)	10.440	0.0000	0.0000	6.3000	8.4600	0.0000	10.620	5.0400	0.0000	0.0000	0.0000
17	6.8660E-05	1.7883E-04	1442.4	43.319	175.97	33.271	48.024	10.429	4893.3	7.8279E+06	7.8279E+06
x( M)	11.160	0.0000	0.0000	6.4800	9.0000	0.0000	11.520	5.0400	0.0000	0.0000	0.0000
18	7.1165E-05	2.1552E-04	1394.6	51.364	168.19	40.146	45.718	12.287	5713.7	7.8279E+06	7.8279E+06
x( M)	11.340	0.0000	0.0000	6.6600	9.0000	0.0000	11.700	5.0400	0.0000	0.0000	0.0000
19	6.9192E-05	2.5220E-04	1435.5	62.186	175.16	50.246	47.719	15.466	6568.7	7.8279E+06	7.8279E+06
x( M)	11.160	0.0000	0.0000	6.6600	9.0000	0.0000	11.520	5.0400	0.0000	0.0000	0.0000
20	5.7856E-05	2.8889E-04	1728.7	83.984	224.45	74.504	62.883	24.661	8048.7	7.8279E+06	7.8279E+06
x( M)	10.260	0.0000	0.0000	6.3000	8.4600	0.0000	10.440	5.0400	0.0000	0.0000	0.0000
Max.	7.5686E-05	2.8889E-04	1728.7	87.869	225.22	76.126	64.836	26.575	8048.7	7.8279E+06	7.8279E+06
Pile N.	14	4	20	4	4	4	4	4	20	1	1

LOAD CASE : 3  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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	0.5866	1.0000
2	0.5463	1.0000
3	0.5807	1.0000
4	0.8661	1.0000
5	0.4961	1.0000
6	0.4617	1.0000
7	0.4951	1.0000
8	0.8041	1.0000
9	0.4948	1.0000
10	0.4606	1.0000
11	0.4939	1.0000
12	0.8040	1.0000
13	0.4958	1.0000
14	0.4615	1.0000
15	0.4949	1.0000
16	0.8040	1.0000
17	0.5845	1.0000
18	0.5442	1.0000
19	0.5786	1.0000
20	0.8647	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
62121.4	-9696.71	820.871
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-2230.59	8219.10	91779.1

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
2.05260E-03	-2.55493E-03	1.96266E-04
ANGLE ROT. X, RAD	ANGLE ROT. Y, RAD	ANGLE ROT. Z, RAD
-5.91166E-06	9.48748E-06	1.76156E-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	9.4894E-04	-2.5017E-03	1.5636E-04	-5.9117E-06	9.4875E-06	1.7616E-04
2	1.7416E-03	-2.5017E-03	1.8296E-04	-5.9117E-06	9.4875E-06	1.7616E-04
3	2.5343E-03	-2.5017E-03	2.0957E-04	-5.9117E-06	9.4875E-06	1.7616E-04
4	3.3270E-03	-2.5017E-03	2.3617E-04	-5.9117E-06	9.4875E-06	1.7616E-04
5	9.0624E-04	-2.5283E-03	1.5636E-04	-5.9117E-06	9.4875E-06	1.7616E-04
6	1.6990E-03	-2.5283E-03	1.8296E-04	-5.9117E-06	9.4875E-06	1.7616E-04
7	2.4917E-03	-2.5283E-03	2.0957E-04	-5.9117E-06	9.4875E-06	1.7616E-04
8	3.2844E-03	-2.5283E-03	2.3617E-04	-5.9117E-06	9.4875E-06	1.7616E-04

APPALTATORE:

Consorzio

Soci



ITINERARIO NAPOLI – BARI

PROGETTAZIONE:

Mandatario

Mandanti



RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

PROGETTO ESECUTIVO

RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO
IF28	01	E ZZ CL	VI0403 001	B	262 di 354

9	8.6355E-04	-2.5549E-03	1.5636E-04	-5.9117E-06	9.4875E-06	1.7616E-04
10	1.6562E-03	-2.5549E-03	1.8296E-04	-5.9117E-06	9.4875E-06	1.7616E-04
11	2.4490E-03	-2.5549E-03	2.0957E-04	-5.9117E-06	9.4875E-06	1.7616E-04
12	3.2417E-03	-2.5549E-03	2.3617E-04	-5.9117E-06	9.4875E-06	1.7616E-04
13	8.2086E-04	-2.5815E-03	1.5636E-04	-5.9117E-06	9.4875E-06	1.7616E-04
14	1.6136E-03	-2.5815E-03	1.8296E-04	-5.9117E-06	9.4875E-06	1.7616E-04
15	2.4063E-03	-2.5815E-03	2.0957E-04	-5.9117E-06	9.4875E-06	1.7616E-04
16	3.1990E-03	-2.5815E-03	2.3617E-04	-5.9117E-06	9.4875E-06	1.7616E-04
17	7.7816E-04	-2.6081E-03	1.5636E-04	-5.9117E-06	9.4875E-06	1.7616E-04
18	1.5709E-03	-2.6081E-03	1.8296E-04	-5.9117E-06	9.4875E-06	1.7616E-04
19	2.3636E-03	-2.6081E-03	2.0957E-04	-5.9117E-06	9.4875E-06	1.7616E-04
20	3.1563E-03	-2.6081E-03	2.3617E-04	-5.9117E-06	9.4875E-06	1.7616E-04

MINIMUM	7.7816E-04	-2.6081E-03	1.5636E-04	-5.9117E-06	9.4875E-06	1.7616E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	3.3270E-03	-2.5017E-03	2.3617E-04	-5.9117E-06	9.4875E-06	1.7616E-04
Pile N.	4	1	4	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	1560.8	-470.76	30.592	-2.0843	-84.110	-1253.5
2	2859.8	-450.38	35.480	-2.0843	-101.46	-1213.7
3	3798.1	-467.07	43.155	-2.0843	-124.42	-1247.7
4	4674.2	-602.23	63.222	-2.0843	-171.91	-1512.3
5	1490.8	-430.24	27.623	-2.0843	-78.067	-1178.8
6	2789.8	-411.35	32.062	-2.0843	-94.363	-1140.6
7	3750.9	-428.96	39.244	-2.0843	-116.38	-1177.7
8	4627.1	-584.91	60.702	-2.0843	-167.35	-1490.7
9	1420.8	-434.77	27.540	-2.0843	-77.865	-1194.8
10	2719.9	-415.70	31.966	-2.0843	-94.126	-1156.2
11	3703.7	-433.49	39.129	-2.0843	-116.10	-1193.7
12	4579.9	-592.03	60.637	-2.0843	-167.19	-1512.3
13	1350.9	-440.53	27.534	-2.0843	-77.824	-1213.3
14	2649.9	-421.23	31.958	-2.0843	-94.077	-1174.3
15	3656.5	-439.24	39.120	-2.0843	-116.04	-1212.2
16	4532.7	-589.44	59.595	-2.0843	-164.20	-1505.8
17	1280.9	-492.73	30.359	-2.0843	-83.522	-1325.6
18	2579.9	-471.30	35.197	-2.0843	-100.74	-1283.6
19	3609.3	-488.85	42.828	-2.0843	-123.59	-1319.5
20	4485.5	-631.50	62.927	-2.0843	-171.23	-1600.2
MINIMUM	1280.9	-631.50	27.534	-2.0843	-171.91	-1600.2
Pile N.	17	20	13	1	4	20
MAXIMUM	4674.2	-411.35	63.222	-2.0843	-77.824	-1140.6
Pile N.	4	6	4	1	13	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	9.4894E-04	-2.5017E-03	1.5636E-04	-5.9117E-06	9.4875E-06	1.7616E-04
2	1.7416E-03	-2.5017E-03	1.8296E-04	-5.9117E-06	9.4875E-06	1.7616E-04
3	2.5343E-03	-2.5017E-03	2.0957E-04	-5.9117E-06	9.4875E-06	1.7616E-04
4	3.3270E-03	-2.5017E-03	2.3617E-04	-5.9117E-06	9.4875E-06	1.7616E-04
5	9.0624E-04	-2.5283E-03	1.5636E-04	-5.9117E-06	9.4875E-06	1.7616E-04
6	1.6990E-03	-2.5283E-03	1.8296E-04	-5.9117E-06	9.4875E-06	1.7616E-04
7	2.4917E-03	-2.5283E-03	2.0957E-04	-5.9117E-06	9.4875E-06	1.7616E-04
8	3.2844E-03	-2.5283E-03	2.3617E-04	-5.9117E-06	9.4875E-06	1.7616E-04
9	8.6355E-04	-2.5549E-03	1.5636E-04	-5.9117E-06	9.4875E-06	1.7616E-04
10	1.6562E-03	-2.5549E-03	1.8296E-04	-5.9117E-06	9.4875E-06	1.7616E-04
11	2.4490E-03	-2.5549E-03	2.0957E-04	-5.9117E-06	9.4875E-06	1.7616E-04
12	3.2417E-03	-2.5549E-03	2.3617E-04	-5.9117E-06	9.4875E-06	1.7616E-04
13	8.2086E-04	-2.5815E-03	1.5636E-04	-5.9117E-06	9.4875E-06	1.7616E-04
14	1.6136E-03	-2.5815E-03	1.8296E-04	-5.9117E-06	9.4875E-06	1.7616E-04
15	2.4063E-03	-2.5815E-03	2.0957E-04	-5.9117E-06	9.4875E-06	1.7616E-04
16	3.1990E-03	-2.5815E-03	2.3617E-04	-5.9117E-06	9.4875E-06	1.7616E-04
17	7.7816E-04	-2.6081E-03	1.5636E-04	-5.9117E-06	9.4875E-06	1.7616E-04
18	1.5709E-03	-2.6081E-03	1.8296E-04	-5.9117E-06	9.4875E-06	1.7616E-04
19	2.3636E-03	-2.6081E-03	2.0957E-04	-5.9117E-06	9.4875E-06	1.7616E-04
20	3.1563E-03	-2.6081E-03	2.3617E-04	-5.9117E-06	9.4875E-06	1.7616E-04
MINIMUM	7.7816E-04	-2.6081E-03	1.5636E-04	-5.9117E-06	9.4875E-06	1.7616E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	3.3270E-03	-2.5017E-03	2.3617E-04	-5.9117E-06	9.4875E-06	1.7616E-04
Pile N.	4	1	4	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	1560.8	-470.76	30.592	-2.0843	-84.110	-1253.5
2	2859.8	-450.38	35.480	-2.0843	-101.46	-1213.7

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	COMMESSA <b>IF28</b> LOTTO <b>01</b> CODIFICA <b>E ZZ CL</b> DOCUMENTO <b>VI0403 001</b> REV. <b>B</b> FOGLIO <b>263 di 354</b>

3	3798.1	-467.07	43.155	-2.0843	-124.42	-1247.7
4	4674.2	-602.23	63.222	-2.0843	-171.91	-1512.3
5	1490.8	-430.24	27.623	-2.0843	-78.067	-1178.8
6	2789.8	-411.35	32.062	-2.0843	-94.363	-1140.6
7	3750.9	-428.96	39.244	-2.0843	-116.38	-1177.7
8	4627.1	-584.91	60.702	-2.0843	-167.35	-1490.7
9	1420.8	-434.77	27.540	-2.0843	-77.865	-1194.8
10	2719.9	-415.70	31.966	-2.0843	-94.126	-1156.2
11	3703.7	-433.49	39.129	-2.0843	-116.10	-1193.7
12	4579.9	-592.03	60.637	-2.0843	-167.19	-1512.3
13	1350.9	-440.53	27.534	-2.0843	-77.824	-1213.3
14	2649.9	-421.23	31.958	-2.0843	-94.077	-1174.3
15	3656.5	-439.24	39.120	-2.0843	-116.04	-1212.2
16	4532.7	-589.44	59.595	-2.0843	-164.20	-1505.8
17	1280.9	-492.73	30.359	-2.0843	-83.522	-1325.6
18	2579.9	-471.30	35.197	-2.0843	-100.74	-1283.6
19	3609.3	-488.85	42.828	-2.0843	-123.59	-1319.5
20	4485.5	-631.50	62.927	-2.0843	-171.23	-1600.2
MINIMUM	1280.9	-631.50	27.534	-2.0843	-171.91	-1600.2
Pile N.	17	20	13	1	4	20
MAXIMUM	4674.2	-411.35	63.222	-2.0843	-77.824	-1140.6
Pile N.	4	6	4	1	13	6

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

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1	4674.8
2	5294.1
3	5933.5
4	7238.7
5	4409.0
6	5033.0
7	5694.2
8	7145.5
9	4417.5
10	5040.3
11	5715.6
12	7183.6
13	4433.7
14	5054.9
15	5744.5
16	7136.5
17	4733.5
18	5345.9
19	6042.2
20	7395.3

MINIMUM	4409.0
Pile N.	5
MAXIMUM	7395.3
Pile N.	20

\* 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	-2.5017E-03	-3.5035E-06	-623.24	-84.110	-470.78	-9.5933	-156.93	-2.7075	883.21	7.8279E+06	7.8279E+06
x( M)	0.0000	11.160	6.4800	0.0000	0.0000	8.8200	5.0400	11.340	18.000	0.0000	0.0000
2	-2.5017E-03	-4.3207E-06	-606.16	-101.46	-450.42	-10.877	-148.16	-3.0790	1618.3	7.8279E+06	7.8279E+06
x( M)	0.0000	11.340	6.4800	0.0000	0.0000	9.0000	5.0400	11.700	18.000	0.0000	0.0000
3	-2.5017E-03	-4.8617E-06	-620.94	-124.42	-467.13	-13.085	-155.49	-3.7234	2149.3	7.8279E+06	7.8279E+06
x( M)	0.0000	11.160	6.4800	0.0000	0.0000	9.0000	5.0400	11.520	18.000	0.0000	0.0000
4	-2.5017E-03	-4.8073E-06	-745.48	-171.91	-602.31	-19.586	-222.50	-5.7854	2645.1	7.8279E+06	7.8279E+06
x( M)	0.0000	10.080	6.1200	0.0000	0.0000	8.2800	5.0400	10.440	18.000	0.0000	0.0000
5	-2.5283E-03	-3.8134E-06	-587.94	-78.067	-430.26	-8.5917	-138.12	-2.4059	843.62	7.8279E+06	7.8279E+06
x( M)	0.0000	11.520	6.6600	0.0000	0.0000	9.1800	5.0400	11.880	18.000	0.0000	0.0000
6	-2.5283E-03	-4.7044E-06	-571.53	-94.363	-411.39	-9.7022	-130.20	-2.7285	1578.7	7.8279E+06	7.8279E+06
x( M)	0.0000	11.700	6.6600	0.0000	0.0000	9.3600	5.0400	12.060	18.000	0.0000	0.0000
7	-2.5283E-03	-5.2760E-06	-587.66	-116.38	-429.01	-11.765	-137.75	-3.3310	2122.6	7.8279E+06	7.8279E+06
x( M)	0.0000	11.520	6.6600	0.0000	0.0000	9.1800	5.0400	12.060	18.000	0.0000	0.0000
8	-2.5283E-03	-4.9078E-06	-737.33	-167.35	-584.98	-18.879	-213.70	-5.5536	2618.4	7.8279E+06	7.8279E+06
x( M)	0.0000	10.260	6.1200	0.0000	0.0000	8.4600	5.0400	10.620	18.000	0.0000	0.0000
9	-2.5549E-03	-3.8219E-06	-592.70	-77.865	-434.79	-8.5506	-138.85	-2.3909	804.03	7.8279E+06	7.8279E+06
x( M)	0.0000	11.520	6.6600	0.0000	0.0000	9.1800	5.0400	11.880	18.000	0.0000	0.0000
10	-2.5549E-03	-4.7144E-06	-576.09	-94.126	-415.74	-9.6582	-130.89	-2.7109	1539.1	7.8279E+06	7.8279E+06
x( M)	0.0000	11.700	6.6600	0.0000	0.0000	9.3600	5.0400	12.060	18.000	0.0000	0.0000
11	-2.5549E-03	-5.2868E-06	-592.45	-116.10	-433.54	-11.707	-138.49	-3.3111	2095.9	7.8279E+06	7.8279E+06
x( M)	0.0000	11.520	6.6600	0.0000	0.0000	9.1800	5.0400	12.060	18.000	0.0000	0.0000
12	-2.5549E-03	-4.9013E-06	-744.60	-167.19	-592.11	-18.853	-215.32	-5.5490	2591.7	7.8279E+06	7.8279E+06
x( M)	0.0000	10.260	6.1200	0.0000	0.0000	8.4600	5.0400	10.620	18.000	0.0000	0.0000
13	-2.5815E-03	-3.8214E-06	-598.54	-77.824	-440.55	-8.5359	-140.10	-2.3840	764.44	7.8279E+06	7.8279E+06
x( M)	0.0000	11.520	6.6600	0.0000	0.0000	9.1800	5.0400	11.880	18.000	0.0000	0.0000
14	-2.5815E-03	-4.7139E-06	-581.72	-94.077	-421.26	-9.6430	-132.07	-2.7029	1499.5	7.8279E+06	7.8279E+06
x( M)	0.0000	11.700	6.6600	0.0000	0.0000	9.3600	5.0400	12.060	18.000	0.0000	0.0000





APPALTATORE:

Consorzio

Soci



ITINERARIO NAPOLI – BARI

RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

PROGETTAZIONE:

Mandataria

Mandanti



PROGETTO ESECUTIVO

RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 265 di 354
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12	0.8023	1.0000
13	0.4962	1.0000
14	0.4615	1.0000
15	0.4947	1.0000
16	0.8023	1.0000
17	0.5845	1.0000
18	0.5438	1.0000
19	0.5780	1.0000
20	0.8629	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN 66362.7	HOR. LOAD Y, KN -10280.5	HOR. LOAD Z, KN 1293.36
MOMENT X, KN- M -3786.84	MOMENT Y, KN- M 15522.1	MOMENT Z, KN- M 1.06545E+05

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL, M 2.26643E-03	HORIZONTAL Y, M -2.81654E-03	HORIZONTAL Z, M 3.29237E-04
ANGLE ROT. X, RAD -1.05129E-05	ANGLE ROT. Y, RAD 2.03711E-05	ANGLE ROT. Z, RAD 2.12544E-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	1.0151E-03	-2.7219E-03	2.5827E-04	-1.0513E-05	2.0371E-05	2.1254E-04
2	1.9715E-03	-2.7219E-03	3.0558E-04	-1.0513E-05	2.0371E-05	2.1254E-04
3	2.9280E-03	-2.7219E-03	3.5289E-04	-1.0513E-05	2.0371E-05	2.1254E-04
4	3.8844E-03	-2.7219E-03	4.0020E-04	-1.0513E-05	2.0371E-05	2.1254E-04
5	9.2343E-04	-2.7692E-03	2.5827E-04	-1.0513E-05	2.0371E-05	2.1254E-04
6	1.8799E-03	-2.7692E-03	3.0558E-04	-1.0513E-05	2.0371E-05	2.1254E-04
7	2.8363E-03	-2.7692E-03	3.5289E-04	-1.0513E-05	2.0371E-05	2.1254E-04
8	3.7928E-03	-2.7692E-03	4.0020E-04	-1.0513E-05	2.0371E-05	2.1254E-04
9	8.3176E-04	-2.8165E-03	2.5827E-04	-1.0513E-05	2.0371E-05	2.1254E-04
10	1.7882E-03	-2.8165E-03	3.0558E-04	-1.0513E-05	2.0371E-05	2.1254E-04
11	2.7447E-03	-2.8165E-03	3.5289E-04	-1.0513E-05	2.0371E-05	2.1254E-04
12	3.7011E-03	-2.8165E-03	4.0020E-04	-1.0513E-05	2.0371E-05	2.1254E-04
13	7.4009E-04	-2.8638E-03	2.5827E-04	-1.0513E-05	2.0371E-05	2.1254E-04
14	1.6965E-03	-2.8638E-03	3.0558E-04	-1.0513E-05	2.0371E-05	2.1254E-04
15	2.6530E-03	-2.8638E-03	3.5289E-04	-1.0513E-05	2.0371E-05	2.1254E-04
16	3.6094E-03	-2.8638E-03	4.0020E-04	-1.0513E-05	2.0371E-05	2.1254E-04
17	6.4842E-04	-2.9112E-03	2.5827E-04	-1.0513E-05	2.0371E-05	2.1254E-04
18	1.6049E-03	-2.9112E-03	3.0558E-04	-1.0513E-05	2.0371E-05	2.1254E-04
19	2.5613E-03	-2.9112E-03	3.5289E-04	-1.0513E-05	2.0371E-05	2.1254E-04
20	3.5178E-03	-2.9112E-03	4.0020E-04	-1.0513E-05	2.0371E-05	2.1254E-04
MINIMUM	6.4842E-04	-2.9112E-03	2.5827E-04	-1.0513E-05	2.0371E-05	2.1254E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	3.8844E-03	-2.7219E-03	4.0020E-04	-1.0513E-05	2.0371E-05	2.1254E-04
Pile N.	4	1	4	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	1669.2	-493.96	46.715	-3.7065	-120.57	-1278.8
2	3176.1	-472.07	55.600	-3.7065	-151.83	-1236.4
3	4233.2	-489.44	68.925	-3.7065	-191.94	-1271.7
4	5021.0	-632.83	102.71	-3.7065	-272.51	-1552.2
5	1519.0	-453.53	41.905	-3.7065	-110.84	-1210.0
6	3074.7	-432.92	49.929	-3.7065	-140.10	-1168.7
7	4131.9	-451.48	62.345	-3.7065	-178.44	-1207.7
8	4986.3	-608.05	96.684	-3.7065	-259.77	-1512.7
9	1368.7	-461.81	41.717	-3.7065	-110.38	-1238.8
10	2936.1	-440.84	49.704	-3.7065	-139.54	-1196.8
11	4030.5	-459.76	62.076	-3.7065	-177.78	-1236.6
12	4951.6	-620.04	96.457	-3.7065	-259.22	-1549.4
13	1218.5	-471.55	41.666	-3.7065	-110.20	-1270.7
14	2785.9	-450.17	49.641	-3.7065	-139.32	-1227.7
15	3929.2	-469.46	62.000	-3.7065	-177.52	-1268.5
16	4916.8	-632.15	96.255	-3.7065	-258.72	-1586.3

APPALTATORE:

Consorzio

Soci



ITINERARIO NAPOLI – BARI

PROGETTAZIONE:

Mandatario

Mandanti



RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

PROGETTO ESECUTIVO

RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO
IF28	01	E ZZ CL	VI0403 001	B	266 di 354

17	1068.3	-531.89	46.043	-3.7065	-118.93	-1404.6
18	2635.7	-508.03	54.757	-3.7065	-149.75	-1358.1
19	3827.9	-526.99	67.945	-3.7065	-189.54	-1397.0
20	4882.1	-673.57	100.29	-3.7065	-266.12	-1677.2
MINIMUM	1068.3	-673.57	41.666	-3.7065	-272.51	-1677.2
Pile N.	17	20	13	1	4	20
MAXIMUM	5021.0	-432.92	102.71	-3.7065	-110.20	-1168.7
Pile N.	4	6	4	1	13	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	1.0151E-03	-2.7219E-03	2.5827E-04	-1.0513E-05	2.0371E-05	2.1254E-04
2	1.9715E-03	-2.7219E-03	3.0558E-04	-1.0513E-05	2.0371E-05	2.1254E-04
3	2.9280E-03	-2.7219E-03	3.5289E-04	-1.0513E-05	2.0371E-05	2.1254E-04
4	3.8844E-03	-2.7219E-03	4.0020E-04	-1.0513E-05	2.0371E-05	2.1254E-04
5	9.2343E-04	-2.7692E-03	2.5827E-04	-1.0513E-05	2.0371E-05	2.1254E-04
6	1.8799E-03	-2.7692E-03	3.0558E-04	-1.0513E-05	2.0371E-05	2.1254E-04
7	2.8363E-03	-2.7692E-03	3.5289E-04	-1.0513E-05	2.0371E-05	2.1254E-04
8	3.7928E-03	-2.7692E-03	4.0020E-04	-1.0513E-05	2.0371E-05	2.1254E-04
9	8.3176E-04	-2.8165E-03	2.5827E-04	-1.0513E-05	2.0371E-05	2.1254E-04
10	1.7882E-03	-2.8165E-03	3.0558E-04	-1.0513E-05	2.0371E-05	2.1254E-04
11	2.7447E-03	-2.8165E-03	3.5289E-04	-1.0513E-05	2.0371E-05	2.1254E-04
12	3.7011E-03	-2.8165E-03	4.0020E-04	-1.0513E-05	2.0371E-05	2.1254E-04
13	7.4009E-04	-2.8638E-03	2.5827E-04	-1.0513E-05	2.0371E-05	2.1254E-04
14	1.6965E-03	-2.8638E-03	3.0558E-04	-1.0513E-05	2.0371E-05	2.1254E-04
15	2.6530E-03	-2.8638E-03	3.5289E-04	-1.0513E-05	2.0371E-05	2.1254E-04
16	3.6094E-03	-2.8638E-03	4.0020E-04	-1.0513E-05	2.0371E-05	2.1254E-04
17	6.4842E-04	-2.9112E-03	2.5827E-04	-1.0513E-05	2.0371E-05	2.1254E-04
18	1.6049E-03	-2.9112E-03	3.0558E-04	-1.0513E-05	2.0371E-05	2.1254E-04
19	2.5613E-03	-2.9112E-03	3.5289E-04	-1.0513E-05	2.0371E-05	2.1254E-04
20	3.5178E-03	-2.9112E-03	4.0020E-04	-1.0513E-05	2.0371E-05	2.1254E-04
MINIMUM	6.4842E-04	-2.9112E-03	2.5827E-04	-1.0513E-05	2.0371E-05	2.1254E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	3.8844E-03	-2.7219E-03	4.0020E-04	-1.0513E-05	2.0371E-05	2.1254E-04
Pile N.	4	1	4	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	1669.2	-493.96	46.715	-3.7065	-120.57	-1278.8
2	3176.1	-472.07	55.600	-3.7065	-151.83	-1236.4
3	4233.2	-489.44	68.925	-3.7065	-191.94	-1271.7
4	5021.0	-632.83	102.71	-3.7065	-272.51	-1552.2
5	1519.0	-453.53	41.905	-3.7065	-110.84	-1210.0
6	3074.7	-432.92	49.929	-3.7065	-140.10	-1168.7
7	4131.9	-451.48	62.345	-3.7065	-178.44	-1207.7
8	4986.3	-608.05	96.684	-3.7065	-259.77	-1512.7
9	1368.7	-461.81	41.717	-3.7065	-110.38	-1238.8
10	2936.1	-440.84	49.704	-3.7065	-139.54	-1196.8
11	4030.5	-459.76	62.076	-3.7065	-177.78	-1236.6
12	4951.6	-620.04	96.457	-3.7065	-259.22	-1549.4
13	1218.5	-471.55	41.666	-3.7065	-110.20	-1270.7
14	2785.9	-450.17	49.641	-3.7065	-139.32	-1227.7
15	3929.2	-469.46	62.000	-3.7065	-177.52	-1268.5
16	4916.8	-632.15	96.255	-3.7065	-258.72	-1586.3
17	1068.3	-531.89	46.043	-3.7065	-118.93	-1404.6
18	2635.7	-508.03	54.757	-3.7065	-149.75	-1358.1
19	3827.9	-526.99	67.945	-3.7065	-189.54	-1397.0
20	4882.1	-673.57	100.29	-3.7065	-266.12	-1677.2
MINIMUM	1068.3	-673.57	41.666	-3.7065	-272.51	-1677.2
Pile N.	17	20	13	1	4	20
MAXIMUM	5021.0	-432.92	102.71	-3.7065	-110.20	-1168.7
Pile N.	4	6	4	1	13	6

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

PILE GROUP	STRESS, KN/ M**2
*****	*****
1	4821.2
2	5556.9
3	6277.0
4	7597.6
5	4526.6
6	5292.5
7	6022.6
8	7453.8
9	4528.2
10	5297.9
11	6051.4
12	7543.0



<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>				
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>					
<b>COMMESSA</b> <b>IF28</b>	<b>LOTTO</b> <b>01</b>	<b>CODIFICA</b> <b>E ZZ CL</b>	<b>DOCUMENTO</b> <b>VI0403 001</b>	<b>REV.</b> <b>B</b>	<b>FOGLIO</b> <b>268 di 354</b>

9	6.7785E-05	2.5828E-04	1238.8	58.634	148.41	41.718	40.560	13.140	4528.2	7.8279E+06	7.8279E+06
x( M)	11.520	0.0000	0.0000	6.4800	9.1800	0.0000	11.880	5.0400	0.0000	0.0000	0.0000
10	7.0237E-05	3.0558E-04	1196.8	68.199	141.57	49.709	38.470	15.224	5297.9	7.8279E+06	7.8279E+06
x( M)	11.700	0.0000	0.0000	6.6600	9.1800	0.0000	12.060	5.0400	0.0000	0.0000	0.0000
11	6.8085E-05	3.5289E-04	1236.6	81.772	148.29	62.084	40.459	19.107	6051.4	7.8279E+06	7.8279E+06
x( M)	11.520	0.0000	0.0000	6.6600	9.1800	0.0000	11.880	5.0400	0.0000	0.0000	0.0000
12	5.4379E-05	4.0020E-04	1549.4	113.25	201.04	96.471	56.516	32.446	7543.0	7.8279E+06	7.8279E+06
x( M)	10.440	0.0000	0.0000	6.3000	8.4600	0.0000	10.620	5.0400	0.0000	0.0000	0.0000
13	6.9132E-05	2.5828E-04	1270.7	58.469	150.61	41.668	41.099	13.048	4538.9	7.8279E+06	7.8279E+06
x( M)	11.520	0.0000	0.0000	6.4800	9.1800	0.0000	11.880	5.0400	0.0000	0.0000	0.0000
14	7.1615E-05	3.0558E-04	1227.7	68.001	143.56	49.645	38.970	15.118	5305.6	7.8279E+06	7.8279E+06
x( M)	11.700	0.0000	0.0000	6.6600	9.1800	0.0000	12.060	5.0400	0.0000	0.0000	0.0000
15	6.9444E-05	3.5289E-04	1268.5	81.541	150.48	62.008	41.001	18.975	6089.1	7.8279E+06	7.8279E+06
x( M)	11.520	0.0000	0.0000	6.6600	9.1800	0.0000	11.880	5.0400	0.0000	0.0000	0.0000
16	5.5502E-05	4.0020E-04	1586.3	112.87	203.84	96.270	57.178	32.173	7633.0	7.8279E+06	7.8279E+06
x( M)	10.440	0.0000	0.0000	6.3000	8.4600	0.0000	10.620	5.0400	0.0000	0.0000	0.0000
17	6.5215E-05	2.5828E-04	1404.6	62.207	169.66	46.044	46.632	14.773	4858.9	7.8279E+06	7.8279E+06
x( M)	11.160	0.0000	0.0000	6.4800	9.0000	0.0000	11.520	5.0400	0.0000	0.0000	0.0000
18	6.7629E-05	3.0558E-04	1358.1	72.395	162.10	54.762	44.368	17.130	5615.1	7.8279E+06	7.8279E+06
x( M)	11.340	0.0000	0.0000	6.4800	9.0000	0.0000	11.700	5.0400	0.0000	0.0000	0.0000
19	6.5770E-05	3.5289E-04	1397.0	86.500	168.70	67.953	46.278	21.333	6421.0	7.8279E+06	7.8279E+06
x( M)	11.160	0.0000	0.0000	6.4800	9.0000	0.0000	11.520	5.0400	0.0000	0.0000	0.0000
20	5.5036E-05	4.0020E-04	1677.2	115.59	215.78	100.30	60.959	33.741	7888.0	7.8279E+06	7.8279E+06
x( M)	10.260	0.0000	0.0000	6.3000	8.4600	0.0000	10.440	5.0400	0.0000	0.0000	0.0000
Max.	7.1615E-05	4.0020E-04	1677.2	121.24	215.78	102.72	62.021	36.689	7888.0	7.8279E+06	7.8279E+06
Pile N.	14	4	20	4	20	4	4	4	20	1	1

LOAD CASE : 5  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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	0.5955	1.0000
2	0.5546	1.0000
3	0.5876	1.0000
4	0.8661	1.0000
5	0.4984	1.0000
6	0.4626	1.0000
7	0.4951	1.0000
8	0.7991	1.0000
9	0.4961	1.0000
10	0.4606	1.0000
11	0.4931	1.0000
12	0.7983	1.0000
13	0.4971	1.0000
14	0.4615	1.0000
15	0.4941	1.0000
16	0.7983	1.0000
17	0.5845	1.0000
18	0.5430	1.0000
19	0.5766	1.0000
20	0.8586	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
43281.8	-5560.41	1074.70
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-2681.66	11403.5	51955.9

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
1.32030E-03	-1.32240E-03	2.39124E-04
ANGLE ROT. X, RAD	ANGLE ROT. Y, RAD	ANGLE ROT. Z, RAD
-6.70135E-06	1.14197E-05	8.17746E-05

THE GLOBAL STRUCTURAL COORDINATE SYSTEM

APPALTATORE:

Consorzio

Soci



ITINERARIO NAPOLI – BARI

PROGETTAZIONE:

Mandataria

Mandanti



RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

PROGETTO ESECUTIVO

RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO
IF28	01	E ZZ CL	VI0403 001	B	269 di 354

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	8.7110E-04	-1.2621E-03	1.9389E-04	-6.7013E-06	1.1420E-05	8.1775E-05
2	1.2391E-03	-1.2621E-03	2.2405E-04	-6.7013E-06	1.1420E-05	8.1775E-05
3	1.6071E-03	-1.2621E-03	2.5420E-04	-6.7013E-06	1.1420E-05	8.1775E-05
4	1.9751E-03	-1.2621E-03	2.8436E-04	-6.7013E-06	1.1420E-05	8.1775E-05
5	8.1971E-04	-1.2922E-03	1.9389E-04	-6.7013E-06	1.1420E-05	8.1775E-05
6	1.1877E-03	-1.2922E-03	2.2405E-04	-6.7013E-06	1.1420E-05	8.1775E-05
7	1.5557E-03	-1.2922E-03	2.5420E-04	-6.7013E-06	1.1420E-05	8.1775E-05
8	1.9237E-03	-1.2922E-03	2.8436E-04	-6.7013E-06	1.1420E-05	8.1775E-05
9	7.6833E-04	-1.3224E-03	1.9389E-04	-6.7013E-06	1.1420E-05	8.1775E-05
10	1.1363E-03	-1.3224E-03	2.2405E-04	-6.7013E-06	1.1420E-05	8.1775E-05
11	1.5043E-03	-1.3224E-03	2.5420E-04	-6.7013E-06	1.1420E-05	8.1775E-05
12	1.8723E-03	-1.3224E-03	2.8436E-04	-6.7013E-06	1.1420E-05	8.1775E-05
13	7.1694E-04	-1.3526E-03	1.9389E-04	-6.7013E-06	1.1420E-05	8.1775E-05
14	1.0849E-03	-1.3526E-03	2.2405E-04	-6.7013E-06	1.1420E-05	8.1775E-05
15	1.4529E-03	-1.3526E-03	2.5420E-04	-6.7013E-06	1.1420E-05	8.1775E-05
16	1.8209E-03	-1.3526E-03	2.8436E-04	-6.7013E-06	1.1420E-05	8.1775E-05
17	6.6555E-04	-1.3827E-03	1.9389E-04	-6.7013E-06	1.1420E-05	8.1775E-05
18	1.0335E-03	-1.3827E-03	2.2405E-04	-6.7013E-06	1.1420E-05	8.1775E-05
19	1.4015E-03	-1.3827E-03	2.5420E-04	-6.7013E-06	1.1420E-05	8.1775E-05
20	1.7695E-03	-1.3827E-03	2.8436E-04	-6.7013E-06	1.1420E-05	8.1775E-05
MINIMUM	6.6555E-04	-1.3827E-03	1.9389E-04	-6.7013E-06	1.1420E-05	8.1775E-05
Pile N.	17	17	1	1	1	1
MAXIMUM	1.9751E-03	-1.2621E-03	2.8436E-04	-6.7013E-06	1.1420E-05	8.1775E-05
Pile N.	4	1	4	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	1433.2	-265.59	41.745	-2.3627	-114.88	-718.41
2	2036.2	-255.56	47.866	-2.3627	-136.25	-699.41
3	2639.3	-263.34	57.187	-2.3627	-163.78	-714.42
4	3179.9	-324.02	79.475	-2.3627	-215.07	-825.05
5	1349.0	-248.51	37.950	-2.3627	-107.48	-694.59
6	1952.0	-238.76	43.500	-2.3627	-127.58	-675.42
7	2555.1	-247.29	52.278	-2.3627	-154.12	-692.51
8	3123.1	-318.95	76.103	-2.3627	-208.96	-826.69
9	1264.8	-254.76	37.796	-2.3627	-107.13	-715.76
10	1867.8	-237.48	42.041	-2.3627	-123.50	-675.23
11	2470.9	-253.56	52.081	-2.3627	-153.67	-713.74
12	3066.3	-327.47	75.956	-2.3627	-208.61	-852.31
13	1180.6	-261.87	37.774	-2.3627	-107.04	-738.63
14	1783.6	-243.96	41.986	-2.3627	-123.30	-696.43
15	2386.6	-260.66	52.053	-2.3627	-153.56	-736.58
16	2989.7	-336.14	75.850	-2.3627	-208.34	-878.18
17	1096.4	-292.62	41.071	-2.3627	-113.39	-807.31
18	1699.4	-281.26	47.034	-2.3627	-134.40	-785.64
19	2302.4	-290.13	56.274	-2.3627	-161.75	-802.88
20	2905.5	-358.50	78.674	-2.3627	-213.29	-928.26
MINIMUM	1096.4	-358.50	37.774	-2.3627	-215.07	-928.26
Pile N.	17	20	13	1	4	20
MAXIMUM	3179.9	-237.48	79.475	-2.3627	-107.04	-675.23
Pile N.	4	10	4	1	13	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	8.7110E-04	-1.2621E-03	1.9389E-04	-6.7013E-06	1.1420E-05	8.1775E-05
2	1.2391E-03	-1.2621E-03	2.2405E-04	-6.7013E-06	1.1420E-05	8.1775E-05
3	1.6071E-03	-1.2621E-03	2.5420E-04	-6.7013E-06	1.1420E-05	8.1775E-05
4	1.9751E-03	-1.2621E-03	2.8436E-04	-6.7013E-06	1.1420E-05	8.1775E-05
5	8.1971E-04	-1.2922E-03	1.9389E-04	-6.7013E-06	1.1420E-05	8.1775E-05
6	1.1877E-03	-1.2922E-03	2.2405E-04	-6.7013E-06	1.1420E-05	8.1775E-05
7	1.5557E-03	-1.2922E-03	2.5420E-04	-6.7013E-06	1.1420E-05	8.1775E-05
8	1.9237E-03	-1.2922E-03	2.8436E-04	-6.7013E-06	1.1420E-05	8.1775E-05
9	7.6833E-04	-1.3224E-03	1.9389E-04	-6.7013E-06	1.1420E-05	8.1775E-05
10	1.1363E-03	-1.3224E-03	2.2405E-04	-6.7013E-06	1.1420E-05	8.1775E-05
11	1.5043E-03	-1.3224E-03	2.5420E-04	-6.7013E-06	1.1420E-05	8.1775E-05
12	1.8723E-03	-1.3224E-03	2.8436E-04	-6.7013E-06	1.1420E-05	8.1775E-05
13	7.1694E-04	-1.3526E-03	1.9389E-04	-6.7013E-06	1.1420E-05	8.1775E-05
14	1.0849E-03	-1.3526E-03	2.2405E-04	-6.7013E-06	1.1420E-05	8.1775E-05
15	1.4529E-03	-1.3526E-03	2.5420E-04	-6.7013E-06	1.1420E-05	8.1775E-05
16	1.8209E-03	-1.3526E-03	2.8436E-04	-6.7013E-06	1.1420E-05	8.1775E-05
17	6.6555E-04	-1.3827E-03	1.9389E-04	-6.7013E-06	1.1420E-05	8.1775E-05
18	1.0335E-03	-1.3827E-03	2.2405E-04	-6.7013E-06	1.1420E-05	8.1775E-05
19	1.4015E-03	-1.3827E-03	2.5420E-04	-6.7013E-06	1.1420E-05	8.1775E-05
20	1.7695E-03	-1.3827E-03	2.8436E-04	-6.7013E-06	1.1420E-05	8.1775E-05

<b>APPALTATORE:</b> Consorzio <span style="float: right;">Soci</span>   		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <span style="float: right;">Mandanti</span>   		
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>		

MINIMUM	6.6555E-04	-1.3827E-03	1.9389E-04	-6.7013E-06	1.1420E-05	8.1775E-05
Pile N.	17	17	1	1	1	1
MAXIMUM	1.9751E-03	-1.2621E-03	2.8436E-04	-6.7013E-06	1.1420E-05	8.1775E-05
Pile N.	4	1	4	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	1433.2	-265.59	41.745	-2.3627	-114.88	-718.41
2	2036.2	-255.56	47.866	-2.3627	-136.25	-699.41
3	2639.3	-263.34	57.187	-2.3627	-163.78	-714.42
4	3179.9	-324.02	79.475	-2.3627	-215.07	-825.05
5	1349.0	-248.51	37.950	-2.3627	-107.48	-694.59
6	1952.0	-238.76	43.500	-2.3627	-127.58	-675.42
7	2555.1	-247.29	52.278	-2.3627	-154.12	-692.51
8	3123.1	-318.95	76.103	-2.3627	-208.96	-826.69
9	1264.8	-254.76	37.796	-2.3627	-107.13	-715.76
10	1867.8	-237.48	42.041	-2.3627	-123.50	-675.23
11	2470.9	-253.56	52.081	-2.3627	-153.67	-713.74
12	3066.3	-327.47	75.956	-2.3627	-208.61	-852.31
13	1180.6	-261.87	37.774	-2.3627	-107.04	-738.63
14	1783.6	-243.96	41.986	-2.3627	-123.30	-696.43
15	2386.6	-260.66	52.053	-2.3627	-153.56	-736.58
16	2989.7	-336.14	75.850	-2.3627	-208.34	-878.18
17	1096.4	-292.62	41.071	-2.3627	-113.39	-807.31
18	1699.4	-281.26	47.034	-2.3627	-134.40	-785.64
19	2302.4	-290.13	56.274	-2.3627	-161.75	-802.88
20	2905.5	-358.50	78.674	-2.3627	-213.29	-928.26
MINIMUM	1096.4	-358.50	37.774	-2.3627	-215.07	-928.26
Pile N.	17	20	13	1	4	20
MAXIMUM	3179.9	-237.48	79.475	-2.3627	-107.04	-675.23
Pile N.	4	10	4	1	13	10

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







PILE GROUP	STRESS, KN/ M**2
1	3006.8
2	3302.8
3	3705.6
4	4372.7
5	2884.6
6	3179.1
7	3587.0
8	4340.8
9	2900.0
10	3128.6
11	3601.7
12	4383.4
13	2920.6
14	3143.9
15	3621.4
16	4415.8
17	3080.8
18	3367.2
19	3774.7
20	4518.7
MINIMUM	2884.6
Pile N.	5
MAXIMUM	4518.7
Pile N.	20

\* 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	-1.2621E-03	-4.5346E-06	-360.65	-114.88	-265.60	-13.733	-117.24	-3.8913	811.03	7.8279E+06	7.8279E+06
x( M)	0.0000	10.440	6.1200	0.0000	0.0000	8.4600	5.0400	10.800	18.000	0.0000	0.0000
2	-1.2621E-03	-5.4203E-06	-352.25	-136.25	-255.57	-15.425	-111.55	-4.4036	1152.3	7.8279E+06	7.8279E+06
x( M)	0.0000	10.620	6.1200	0.0000	0.0000	8.6400	5.0400	10.980	18.000	0.0000	0.0000
3	-1.2621E-03	-6.0864E-06	-358.89	-163.78	-263.36	-18.192	-115.68	-5.1965	1493.5	7.8279E+06	7.8279E+06
x( M)	0.0000	10.620	6.1200	0.0000	0.0000	8.4600	5.0400	10.980	18.000	0.0000	0.0000
4	-1.2621E-03	-6.1743E-06	-404.27	-215.07	-324.05	-25.014	-148.30	-7.2454	1799.5	7.8279E+06	7.8279E+06
x( M)	0.0000	9.9000	5.9400	0.0000	0.0000	8.1000	5.0400	10.260	18.000	0.0000	0.0000
5	-1.2922E-03	-4.8046E-06	-348.42	-107.48	-248.52	-12.466	-105.67	-3.5757	763.38	7.8279E+06	7.8279E+06
x( M)	0.0000	10.800	6.3000	0.0000	0.0000	8.6400	5.0400	11.340	18.000	0.0000	0.0000
6	-1.2922E-03	-5.7737E-06	-339.90	-127.58	-238.78	-13.967	-100.19	-4.0619	1104.6	7.8279E+06	7.8279E+06
x( M)	0.0000	10.980	6.3000	0.0000	0.0000	8.8200	5.0400	11.520	18.000	0.0000	0.0000
7	-1.2922E-03	-6.4466E-06	-347.53	-154.12	-247.31	-16.562	-104.75	-4.8001	1445.9	7.8279E+06	7.8279E+06
x( M)	0.0000	10.980	6.3000	0.0000	0.0000	8.6400	5.0400	11.340	18.000	0.0000	0.0000
8	-1.2922E-03	-6.2758E-06	-403.84	-208.96	-318.98	-23.948	-143.40	-6.8951	1767.3	7.8279E+06	7.8279E+06
x( M)	0.0000	10.080	5.9400	0.0000	0.0000	8.2800	5.0400	10.440	18.000	0.0000	0.0000



<b>APPALTATORE:</b> Consorzio  Soci  	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>				
<b>PROGETTAZIONE:</b> Mandataria  Mandanti  					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>					
COMMESSA <b>IF28</b>	LOTTO <b>01</b>	CODIFICA <b>E ZZ CL</b>	DOCUMENTO <b>VI0403 001</b>	REV. <b>B</b>	FOGLIO <b>272 di 354</b>

1	0.5892	1.0000
2	0.5488	1.0000
3	0.5827	1.0000
4	0.8661	1.0000
5	0.4967	1.0000
6	0.4620	1.0000
7	0.4951	1.0000
8	0.8027	1.0000
9	0.4952	1.0000
10	0.4606	1.0000
11	0.4936	1.0000
12	0.8023	1.0000
13	0.4962	1.0000
14	0.4615	1.0000
15	0.4947	1.0000
16	0.8023	1.0000
17	0.5845	1.0000
18	0.5438	1.0000
19	0.5780	1.0000
20	0.8629	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN 66362.7	HOR. LOAD Y, KN -10280.5	HOR. LOAD Z, KN 1293.36
MOMENT X, KN- M -3786.84	MOMENT Y, KN- M 15522.1	MOMENT Z, KN- M 1.06545E+05

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL, M 2.26643E-03	HORIZONTAL Y, M -2.81654E-03	HORIZONTAL Z, M 3.29237E-04
ANGLE ROT. X, RAD -1.05129E-05	ANGLE ROT. Y, RAD 2.03711E-05	ANGLE ROT. Z, RAD 2.12544E-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	1.0151E-03	-2.7219E-03	2.5827E-04	-1.0513E-05	2.0371E-05	2.1254E-04
2	1.9715E-03	-2.7219E-03	3.0558E-04	-1.0513E-05	2.0371E-05	2.1254E-04
3	2.9280E-03	-2.7219E-03	3.5289E-04	-1.0513E-05	2.0371E-05	2.1254E-04
4	3.8844E-03	-2.7219E-03	4.0020E-04	-1.0513E-05	2.0371E-05	2.1254E-04
5	9.2343E-04	-2.7692E-03	2.5827E-04	-1.0513E-05	2.0371E-05	2.1254E-04
6	1.8799E-03	-2.7692E-03	3.0558E-04	-1.0513E-05	2.0371E-05	2.1254E-04
7	2.8363E-03	-2.7692E-03	3.5289E-04	-1.0513E-05	2.0371E-05	2.1254E-04
8	3.7928E-03	-2.7692E-03	4.0020E-04	-1.0513E-05	2.0371E-05	2.1254E-04
9	8.3176E-04	-2.8165E-03	2.5827E-04	-1.0513E-05	2.0371E-05	2.1254E-04
10	1.7882E-03	-2.8165E-03	3.0558E-04	-1.0513E-05	2.0371E-05	2.1254E-04
11	2.7447E-03	-2.8165E-03	3.5289E-04	-1.0513E-05	2.0371E-05	2.1254E-04
12	3.7011E-03	-2.8165E-03	4.0020E-04	-1.0513E-05	2.0371E-05	2.1254E-04
13	7.4009E-04	-2.8638E-03	2.5827E-04	-1.0513E-05	2.0371E-05	2.1254E-04
14	1.6965E-03	-2.8638E-03	3.0558E-04	-1.0513E-05	2.0371E-05	2.1254E-04
15	2.6530E-03	-2.8638E-03	3.5289E-04	-1.0513E-05	2.0371E-05	2.1254E-04
16	3.6094E-03	-2.8638E-03	4.0020E-04	-1.0513E-05	2.0371E-05	2.1254E-04
17	6.4842E-04	-2.9112E-03	2.5827E-04	-1.0513E-05	2.0371E-05	2.1254E-04
18	1.6049E-03	-2.9112E-03	3.0558E-04	-1.0513E-05	2.0371E-05	2.1254E-04
19	2.5613E-03	-2.9112E-03	3.5289E-04	-1.0513E-05	2.0371E-05	2.1254E-04
20	3.5178E-03	-2.9112E-03	4.0020E-04	-1.0513E-05	2.0371E-05	2.1254E-04
MINIMUM	6.4842E-04	-2.9112E-03	2.5827E-04	-1.0513E-05	2.0371E-05	2.1254E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	3.8844E-03	-2.7219E-03	4.0020E-04	-1.0513E-05	2.0371E-05	2.1254E-04
Pile N.	4	1	4	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	1669.2	-493.96	46.715	-3.7065	-120.57	-1278.8
2	3176.1	-472.07	55.600	-3.7065	-151.83	-1236.4
3	4233.2	-489.44	68.925	-3.7065	-191.94	-1271.7
4	5021.0	-632.83	102.71	-3.7065	-272.51	-1552.2



APPALTATORE:

Consorzio

Soci



PROGETTAZIONE:

Mandatario

Mandanti



PROGETTO ESECUTIVO

RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

ITINERARIO NAPOLI – BARI

RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 273 di 354
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5	1519.0	-453.53	41.905	-3.7065	-110.84	-1210.0
6	3074.7	-432.92	49.929	-3.7065	-140.10	-1168.7
7	4131.9	-451.48	62.345	-3.7065	-178.44	-1207.7
8	4986.3	-608.05	96.684	-3.7065	-259.77	-1512.7
9	1368.7	-461.81	41.717	-3.7065	-110.38	-1238.8
10	2936.1	-440.84	49.704	-3.7065	-139.54	-1196.8
11	4030.5	-459.76	62.076	-3.7065	-177.78	-1236.6
12	4951.6	-620.04	96.457	-3.7065	-259.22	-1549.4
13	1218.5	-471.55	41.666	-3.7065	-110.20	-1270.7
14	2785.9	-450.17	49.641	-3.7065	-139.32	-1227.7
15	3929.2	-469.46	62.000	-3.7065	-177.52	-1268.5
16	4916.8	-632.15	96.255	-3.7065	-258.72	-1586.3
17	1068.3	-531.89	46.043	-3.7065	-118.93	-1404.6
18	2635.7	-508.03	54.757	-3.7065	-149.75	-1358.1
19	3827.9	-526.99	67.945	-3.7065	-189.54	-1397.0
20	4882.1	-673.57	100.29	-3.7065	-266.12	-1677.2
MINIMUM	1068.3	-673.57	41.666	-3.7065	-272.51	-1677.2
Pile N.	17	20	13	1	4	20
MAXIMUM	5021.0	-432.92	102.71	-3.7065	-110.20	-1168.7
Pile N.	4	6	4	1	13	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	1.0151E-03	-2.7219E-03	2.5827E-04	-1.0513E-05	2.0371E-05	2.1254E-04
2	1.9715E-03	-2.7219E-03	3.0558E-04	-1.0513E-05	2.0371E-05	2.1254E-04
3	2.9280E-03	-2.7219E-03	3.5289E-04	-1.0513E-05	2.0371E-05	2.1254E-04
4	3.8844E-03	-2.7219E-03	4.0020E-04	-1.0513E-05	2.0371E-05	2.1254E-04
5	9.2343E-04	-2.7692E-03	2.5827E-04	-1.0513E-05	2.0371E-05	2.1254E-04
6	1.8799E-03	-2.7692E-03	3.0558E-04	-1.0513E-05	2.0371E-05	2.1254E-04
7	2.8363E-03	-2.7692E-03	3.5289E-04	-1.0513E-05	2.0371E-05	2.1254E-04
8	3.7928E-03	-2.7692E-03	4.0020E-04	-1.0513E-05	2.0371E-05	2.1254E-04
9	8.3176E-04	-2.8165E-03	2.5827E-04	-1.0513E-05	2.0371E-05	2.1254E-04
10	1.7882E-03	-2.8165E-03	3.0558E-04	-1.0513E-05	2.0371E-05	2.1254E-04
11	2.7447E-03	-2.8165E-03	3.5289E-04	-1.0513E-05	2.0371E-05	2.1254E-04
12	3.7011E-03	-2.8165E-03	4.0020E-04	-1.0513E-05	2.0371E-05	2.1254E-04
13	7.4009E-04	-2.8638E-03	2.5827E-04	-1.0513E-05	2.0371E-05	2.1254E-04
14	1.6965E-03	-2.8638E-03	3.0558E-04	-1.0513E-05	2.0371E-05	2.1254E-04
15	2.6530E-03	-2.8638E-03	3.5289E-04	-1.0513E-05	2.0371E-05	2.1254E-04
16	3.6094E-03	-2.8638E-03	4.0020E-04	-1.0513E-05	2.0371E-05	2.1254E-04
17	6.4842E-04	-2.9112E-03	2.5827E-04	-1.0513E-05	2.0371E-05	2.1254E-04
18	1.6049E-03	-2.9112E-03	3.0558E-04	-1.0513E-05	2.0371E-05	2.1254E-04
19	2.5613E-03	-2.9112E-03	3.5289E-04	-1.0513E-05	2.0371E-05	2.1254E-04
20	3.5178E-03	-2.9112E-03	4.0020E-04	-1.0513E-05	2.0371E-05	2.1254E-04
MINIMUM	6.4842E-04	-2.9112E-03	2.5827E-04	-1.0513E-05	2.0371E-05	2.1254E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	3.8844E-03	-2.7219E-03	4.0020E-04	-1.0513E-05	2.0371E-05	2.1254E-04
Pile N.	4	1	4	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	1669.2	-493.96	46.715	-3.7065	-120.57	-1278.8
2	3176.1	-472.07	55.600	-3.7065	-151.83	-1236.4
3	4233.2	-489.44	68.925	-3.7065	-191.94	-1271.7
4	5021.0	-632.83	102.71	-3.7065	-272.51	-1552.2
5	1519.0	-453.53	41.905	-3.7065	-110.84	-1210.0
6	3074.7	-432.92	49.929	-3.7065	-140.10	-1168.7
7	4131.9	-451.48	62.345	-3.7065	-178.44	-1207.7
8	4986.3	-608.05	96.684	-3.7065	-259.77	-1512.7
9	1368.7	-461.81	41.717	-3.7065	-110.38	-1238.8
10	2936.1	-440.84	49.704	-3.7065	-139.54	-1196.8
11	4030.5	-459.76	62.076	-3.7065	-177.78	-1236.6
12	4951.6	-620.04	96.457	-3.7065	-259.22	-1549.4
13	1218.5	-471.55	41.666	-3.7065	-110.20	-1270.7
14	2785.9	-450.17	49.641	-3.7065	-139.32	-1227.7
15	3929.2	-469.46	62.000	-3.7065	-177.52	-1268.5
16	4916.8	-632.15	96.255	-3.7065	-258.72	-1586.3
17	1068.3	-531.89	46.043	-3.7065	-118.93	-1404.6
18	2635.7	-508.03	54.757	-3.7065	-149.75	-1358.1
19	3827.9	-526.99	67.945	-3.7065	-189.54	-1397.0
20	4882.1	-673.57	100.29	-3.7065	-266.12	-1677.2
MINIMUM	1068.3	-673.57	41.666	-3.7065	-272.51	-1677.2
Pile N.	17	20	13	1	4	20
MAXIMUM	5021.0	-432.92	102.71	-3.7065	-110.20	-1168.7
Pile N.	4	6	4	1	13	6

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

\*\*\*\*\*



APPALTATORE: Consorzio <b>HirpiniaAV</b> Soci <b>salini impregilo</b> <b>ASTALDI</b>		<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>				
PROGETTAZIONE: Mandataria <b>ROKSOJL</b> Mandanti <b>NETENGINEERING</b> <b>Alpina</b>						
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B						
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	
IF28	01	E ZZ CL	VI0403 001	B	275 di 354	

3	6.0183E-05	3.5289E-04	1271.7	88.078	160.64	68.934	44.304	22.230	6277.0	7.8279E+06	7.8279E+06
x( M)	10.980	0.0000	0.0000	6.4800	8.8200	0.0000	11.340	5.0400	0.0000	0.0000	0.0000
4	5.2488E-05	4.0020E-04	1552.2	121.24	212.71	102.72	62.021	36.689	7597.6	7.8279E+06	7.8279E+06
x( M)	10.080	0.0000	0.0000	6.1200	8.2800	0.0000	10.440	5.0400	0.0000	0.0000	0.0000
5	6.6261E-05	2.5828E-04	1210.0	58.932	146.70	41.907	40.164	13.293	4526.6	7.8279E+06	7.8279E+06
x( M)	11.520	0.0000	0.0000	6.4800	9.1800	0.0000	11.880	5.0400	0.0000	0.0000	0.0000
6	6.8681E-05	3.0558E-04	1168.7	68.550	140.08	49.934	38.109	15.399	5292.5	7.8279E+06	7.8279E+06
x( M)	11.700	0.0000	0.0000	6.6600	9.1800	0.0000	12.060	5.0400	0.0000	0.0000	0.0000
7	6.6559E-05	3.5289E-04	1207.7	82.181	146.54	62.353	40.057	19.324	6022.6	7.8279E+06	7.8279E+06
x( M)	11.520	0.0000	0.0000	6.6600	9.1800	0.0000	11.880	5.0400	0.0000	0.0000	0.0000
8	5.3258E-05	4.0020E-04	1512.7	113.65	198.25	96.699	55.873	32.737	7453.8	7.8279E+06	7.8279E+06
x( M)	10.440	0.0000	0.0000	6.3000	8.4600	0.0000	10.440	5.0400	0.0000	0.0000	0.0000
9	6.7785E-05	2.5828E-04	1238.8	58.634	148.41	41.718	40.560	13.140	4528.2	7.8279E+06	7.8279E+06
x( M)	11.520	0.0000	0.0000	6.4800	9.1800	0.0000	11.880	5.0400	0.0000	0.0000	0.0000
10	7.0237E-05	3.0558E-04	1196.8	68.199	141.57	49.709	38.470	15.224	5297.9	7.8279E+06	7.8279E+06
x( M)	11.700	0.0000	0.0000	6.6600	9.1800	0.0000	12.060	5.0400	0.0000	0.0000	0.0000
11	6.8085E-05	3.5289E-04	1236.6	81.772	148.29	62.084	40.459	19.107	6051.4	7.8279E+06	7.8279E+06
x( M)	11.520	0.0000	0.0000	6.6600	9.1800	0.0000	11.880	5.0400	0.0000	0.0000	0.0000
12	5.4379E-05	4.0020E-04	1549.4	113.25	201.04	96.471	56.516	32.446	7543.0	7.8279E+06	7.8279E+06
x( M)	10.440	0.0000	0.0000	6.3000	8.4600	0.0000	10.620	5.0400	0.0000	0.0000	0.0000
13	6.9132E-05	2.5828E-04	1270.7	58.469	150.61	41.668	41.099	13.048	4538.9	7.8279E+06	7.8279E+06
x( M)	11.520	0.0000	0.0000	6.4800	9.1800	0.0000	11.880	5.0400	0.0000	0.0000	0.0000
14	7.1615E-05	3.0558E-04	1227.7	68.001	143.56	49.645	38.970	15.118	5305.6	7.8279E+06	7.8279E+06
x( M)	11.700	0.0000	0.0000	6.6600	9.1800	0.0000	12.060	5.0400	0.0000	0.0000	0.0000
15	6.9444E-05	3.5289E-04	1268.5	81.541	150.48	62.008	41.001	18.975	6089.1	7.8279E+06	7.8279E+06
x( M)	11.520	0.0000	0.0000	6.6600	9.1800	0.0000	11.880	5.0400	0.0000	0.0000	0.0000
16	5.5502E-05	4.0020E-04	1586.3	112.87	203.84	96.270	57.178	32.173	7633.0	7.8279E+06	7.8279E+06
x( M)	10.440	0.0000	0.0000	6.3000	8.4600	0.0000	10.620	5.0400	0.0000	0.0000	0.0000
17	6.5215E-05	2.5828E-04	1404.6	62.207	169.66	46.044	46.632	14.773	4858.9	7.8279E+06	7.8279E+06
x( M)	11.160	0.0000	0.0000	6.4800	9.0000	0.0000	11.520	5.0400	0.0000	0.0000	0.0000
18	6.7629E-05	3.0558E-04	1358.1	72.395	162.10	54.762	44.368	17.130	5615.1	7.8279E+06	7.8279E+06
x( M)	11.340	0.0000	0.0000	6.4800	9.0000	0.0000	11.700	5.0400	0.0000	0.0000	0.0000
19	6.5770E-05	3.5289E-04	1397.0	86.500	168.70	67.953	46.278	21.333	6421.0	7.8279E+06	7.8279E+06
x( M)	11.160	0.0000	0.0000	6.4800	9.0000	0.0000	11.520	5.0400	0.0000	0.0000	0.0000
20	5.5036E-05	4.0020E-04	1677.2	115.59	215.78	100.30	60.959	33.741	7888.0	7.8279E+06	7.8279E+06
x( M)	10.260	0.0000	0.0000	6.3000	8.4600	0.0000	10.440	5.0400	0.0000	0.0000	0.0000
Max.	7.1615E-05	4.0020E-04	1677.2	121.24	215.78	102.72	62.021	36.689	7888.0	7.8279E+06	7.8279E+06
Pile N.	14	4	20	4	20	4	4	4	20	1	1

LOAD CASE : 7  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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	0.6069	1.0000
2	0.5651	1.0000
3	0.5964	1.0000
4	0.8661	1.0000
5	0.5014	1.0000
6	0.4638	1.0000
7	0.4951	1.0000
8	0.7925	1.0000
9	0.4979	1.0000
10	0.4606	1.0000
11	0.4920	1.0000
12	0.7909	1.0000
13	0.4989	1.0000
14	0.4615	1.0000
15	0.4930	1.0000
16	0.7909	1.0000
17	0.5845	1.0000
18	0.5414	1.0000
19	0.5740	1.0000
20	0.8506	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
51173.6	-4260.48	1293.36
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-3752.54	15546.0	61247.4

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>							COMMESSA <b>IF28</b>

VERTICAL , M 1.59002E-03	HORIZONTAL Y, M -1.10218E-03	HORIZONTAL Z, M 2.91034E-04
ANGLE ROT. X,RAD -9.39263E-06	ANGLE ROT. Y,RAD 1.60751E-05	ANGLE ROT. Z,RAD 9.49983E-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	1.0935E-03	-1.0176E-03	2.2763E-04	-9.3926E-06	1.6075E-05	9.4998E-05
2	1.5210E-03	-1.0176E-03	2.6990E-04	-9.3926E-06	1.6075E-05	9.4998E-05
3	1.9484E-03	-1.0176E-03	3.1217E-04	-9.3926E-06	1.6075E-05	9.4998E-05
4	2.3759E-03	-1.0176E-03	3.5443E-04	-9.3926E-06	1.6075E-05	9.4998E-05
5	1.0211E-03	-1.0599E-03	2.2763E-04	-9.3926E-06	1.6075E-05	9.4998E-05
6	1.4486E-03	-1.0599E-03	2.6990E-04	-9.3926E-06	1.6075E-05	9.4998E-05
7	1.8761E-03	-1.0599E-03	3.1217E-04	-9.3926E-06	1.6075E-05	9.4998E-05
8	2.3036E-03	-1.0599E-03	3.5443E-04	-9.3926E-06	1.6075E-05	9.4998E-05
9	9.4878E-04	-1.1022E-03	2.2763E-04	-9.3926E-06	1.6075E-05	9.4998E-05
10	1.3763E-03	-1.1022E-03	2.6990E-04	-9.3926E-06	1.6075E-05	9.4998E-05
11	1.8038E-03	-1.1022E-03	3.1217E-04	-9.3926E-06	1.6075E-05	9.4998E-05
12	2.2313E-03	-1.1022E-03	3.5443E-04	-9.3926E-06	1.6075E-05	9.4998E-05
13	8.7644E-04	-1.1444E-03	2.2763E-04	-9.3926E-06	1.6075E-05	9.4998E-05
14	1.3039E-03	-1.1444E-03	2.6990E-04	-9.3926E-06	1.6075E-05	9.4998E-05
15	1.7314E-03	-1.1444E-03	3.1217E-04	-9.3926E-06	1.6075E-05	9.4998E-05
16	2.1589E-03	-1.1444E-03	3.5443E-04	-9.3926E-06	1.6075E-05	9.4998E-05
17	8.0411E-04	-1.1867E-03	2.2763E-04	-9.3926E-06	1.6075E-05	9.4998E-05
18	1.2316E-03	-1.1867E-03	2.6990E-04	-9.3926E-06	1.6075E-05	9.4998E-05
19	1.6591E-03	-1.1867E-03	3.1217E-04	-9.3926E-06	1.6075E-05	9.4998E-05
20	2.0866E-03	-1.1867E-03	3.5443E-04	-9.3926E-06	1.6075E-05	9.4998E-05
MINIMUM	8.0411E-04	-1.1867E-03	2.2763E-04	-9.3926E-06	1.6075E-05	9.4998E-05
Pile N.	17	17	1	1	1	1
MAXIMUM	2.3759E-03	-1.0176E-03	3.5443E-04	-9.3926E-06	1.6075E-05	9.4998E-05
Pile N.	4	1	4	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	1797.6	-194.73	47.896	-3.3116	-126.81	-474.84
2	2498.1	-186.99	57.072	-3.3116	-158.04	-460.51
3	3150.5	-192.51	69.940	-3.3116	-196.31	-471.02
4	3623.0	-237.08	98.434	-3.3116	-263.13	-550.94
5	1679.0	-185.22	43.198	-3.3116	-117.75	-470.36
6	2379.6	-177.25	51.399	-3.3116	-146.87	-454.98
7	3070.6	-183.55	63.425	-3.3116	-183.59	-467.46
8	3543.1	-238.11	93.846	-3.3116	-254.85	-568.25
9	1560.5	-194.49	42.960	-3.3116	-117.23	-501.36
10	2261.1	-186.18	51.118	-3.3116	-146.24	-485.24
11	2961.6	-192.82	63.106	-3.3116	-182.88	-498.46
12	3463.1	-250.33	93.592	-3.3116	-254.28	-604.99
13	1442.0	-204.62	42.919	-3.3116	-117.09	-533.98
14	2142.5	-195.92	51.066	-3.3116	-146.07	-517.06
15	2843.1	-202.86	63.040	-3.3116	-182.66	-530.87
16	3383.2	-262.72	93.418	-3.3116	-253.84	-641.95
17	1323.4	-233.78	46.612	-3.3116	-124.14	-603.02
18	2024.0	-224.01	55.399	-3.3116	-154.53	-584.60
19	2724.5	-231.01	68.067	-3.3116	-192.38	-598.09
20	3303.2	-286.32	96.852	-3.3116	-259.83	-698.54
MINIMUM	1323.4	-286.32	42.919	-3.3116	-263.13	-698.54
Pile N.	17	20	13	1	4	20
MAXIMUM	3623.0	-177.25	98.434	-3.3116	-117.09	-454.98
Pile N.	4	6	4	1	13	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	1.0935E-03	-1.0176E-03	2.2763E-04	-9.3926E-06	1.6075E-05	9.4998E-05
2	1.5210E-03	-1.0176E-03	2.6990E-04	-9.3926E-06	1.6075E-05	9.4998E-05
3	1.9484E-03	-1.0176E-03	3.1217E-04	-9.3926E-06	1.6075E-05	9.4998E-05
4	2.3759E-03	-1.0176E-03	3.5443E-04	-9.3926E-06	1.6075E-05	9.4998E-05
5	1.0211E-03	-1.0599E-03	2.2763E-04	-9.3926E-06	1.6075E-05	9.4998E-05
6	1.4486E-03	-1.0599E-03	2.6990E-04	-9.3926E-06	1.6075E-05	9.4998E-05
7	1.8761E-03	-1.0599E-03	3.1217E-04	-9.3926E-06	1.6075E-05	9.4998E-05
8	2.3036E-03	-1.0599E-03	3.5443E-04	-9.3926E-06	1.6075E-05	9.4998E-05

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   		
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>		

9	9.4878E-04	-1.1022E-03	2.2763E-04	-9.3926E-06	1.6075E-05	9.4998E-05
10	1.3763E-03	-1.1022E-03	2.6990E-04	-9.3926E-06	1.6075E-05	9.4998E-05
11	1.8038E-03	-1.1022E-03	3.1217E-04	-9.3926E-06	1.6075E-05	9.4998E-05
12	2.2313E-03	-1.1022E-03	3.5443E-04	-9.3926E-06	1.6075E-05	9.4998E-05
13	8.7644E-04	-1.1444E-03	2.2763E-04	-9.3926E-06	1.6075E-05	9.4998E-05
14	1.3039E-03	-1.1444E-03	2.6990E-04	-9.3926E-06	1.6075E-05	9.4998E-05
15	1.7314E-03	-1.1444E-03	3.1217E-04	-9.3926E-06	1.6075E-05	9.4998E-05
16	2.1589E-03	-1.1444E-03	3.5443E-04	-9.3926E-06	1.6075E-05	9.4998E-05
17	8.0411E-04	-1.1867E-03	2.2763E-04	-9.3926E-06	1.6075E-05	9.4998E-05
18	1.2316E-03	-1.1867E-03	2.6990E-04	-9.3926E-06	1.6075E-05	9.4998E-05
19	1.6591E-03	-1.1867E-03	3.1217E-04	-9.3926E-06	1.6075E-05	9.4998E-05
20	2.0866E-03	-1.1867E-03	3.5443E-04	-9.3926E-06	1.6075E-05	9.4998E-05
MINIMUM	8.0411E-04	-1.1867E-03	2.2763E-04	-9.3926E-06	1.6075E-05	9.4998E-05
Pile N.	17	17	1	1	1	1
MAXIMUM	2.3759E-03	-1.0176E-03	3.5443E-04	-9.3926E-06	1.6075E-05	9.4998E-05
Pile N.	4	1	4	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	1797.6	-194.73	47.896	-3.3116	-126.81	-474.84
2	2498.1	-186.99	57.072	-3.3116	-158.04	-460.51
3	3150.5	-192.51	69.940	-3.3116	-196.31	-471.02
4	3623.0	-237.08	98.434	-3.3116	-263.13	-550.94
5	1679.0	-185.22	43.198	-3.3116	-117.75	-470.36
6	2379.6	-177.25	51.399	-3.3116	-146.87	-454.98
7	3070.6	-183.55	63.425	-3.3116	-183.59	-467.46
8	3543.1	-238.11	93.846	-3.3116	-254.85	-568.25
9	1560.5	-194.49	42.960	-3.3116	-117.23	-501.36
10	2261.1	-186.18	51.118	-3.3116	-146.24	-485.24
11	2961.6	-192.82	63.106	-3.3116	-182.88	-498.46
12	3463.1	-250.33	93.592	-3.3116	-254.28	-604.99
13	1442.0	-204.62	42.919	-3.3116	-117.09	-533.98
14	2142.5	-195.92	51.066	-3.3116	-146.07	-517.06
15	2843.1	-202.86	63.040	-3.3116	-182.66	-530.87
16	3383.2	-262.72	93.418	-3.3116	-253.84	-641.95
17	1323.4	-233.78	46.612	-3.3116	-124.14	-603.02
18	2024.0	-224.01	55.399	-3.3116	-154.53	-584.60
19	2724.5	-231.01	68.067	-3.3116	-192.38	-598.09
20	3303.2	-286.32	96.852	-3.3116	-259.83	-698.54
MINIMUM	1323.4	-286.32	42.919	-3.3116	-263.13	-698.54
Pile N.	17	20	13	1	4	20
MAXIMUM	3623.0	-177.25	98.434	-3.3116	-117.09	-454.98
Pile N.	4	6	4	1	13	6

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







1	2500.5
2	2883.1
3	3322.9
4	3892.9
5	2413.5
6	2789.5
7	3253.3
8	3884.5
9	2437.0
10	2809.0
11	3278.3
12	3940.3
13	2465.9
14	2834.0
15	3303.2
16	3997.9
17	2607.0
18	2970.3
19	3437.9
20	4118.6
MINIMUM	2413.5
Pile N.	5
MAXIMUM	4118.6
Pile N.	20

\* 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	-1.0176E-03	-5.2664E-06	-287.91	-126.81	-194.74	-16.228	-99.504	-4.5463	1017.2	7.8279E+06	7.8279E+06
x( M)	0.0000	10.440	5.9400	0.0000	0.0000	8.2800	5.0400	10.800	18.000	0.0000	0.0000
2	-1.0176E-03	-6.4704E-06	-281.34	-158.04	-187.00	-18.789	-94.275	-5.2969	1413.7	7.8279E+06	7.8279E+06
x( M)	0.0000	10.620	5.9400	0.0000	0.0000	8.4600	5.0400	10.980	18.000	0.0000	0.0000



<b>APPALTATORE:</b> Consorzio  Soci  	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>												
<b>PROGETTAZIONE:</b> Mandataria  Mandanti  													
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">COMMESSA</td> <td style="width: 10%;">LOTTO</td> <td style="width: 15%;">CODIFICA</td> <td style="width: 15%;">DOCUMENTO</td> <td style="width: 10%;">REV.</td> <td style="width: 10%;">FOGLIO</td> </tr> <tr> <td>IF28</td> <td>01</td> <td>E ZZ CL</td> <td>VI0403 001</td> <td>B</td> <td>279 di 354</td> </tr> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF28	01	E ZZ CL	VI0403 001	B	279 di 354
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO								
IF28	01	E ZZ CL	VI0403 001	B	279 di 354								

Pile N.      14                      4                      20                      4                      20                      4                      20                      4                      20                      1                      1

LOAD CASE :      8  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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	0.5866	1.0000
2	0.5463	1.0000
3	0.5807	1.0000
4	0.8661	1.0000
5	0.4961	1.0000
6	0.4617	1.0000
7	0.4951	1.0000
8	0.8041	1.0000
9	0.4948	1.0000
10	0.4606	1.0000
11	0.4939	1.0000
12	0.8040	1.0000
13	0.4958	1.0000
14	0.4615	1.0000
15	0.4949	1.0000
16	0.8040	1.0000
17	0.5845	1.0000
18	0.5442	1.0000
19	0.5786	1.0000
20	0.8647	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
62121.4	-9696.71	820.871
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-2230.59	8219.10	91779.1

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
2.05260E-03	-2.55493E-03	1.96266E-04
ANGLE ROT. X, RAD	ANGLE ROT. Y, RAD	ANGLE ROT. Z, RAD
-5.91166E-06	9.48748E-06	1.76156E-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	9.4894E-04	-2.5017E-03	1.5636E-04	-5.9117E-06	9.4875E-06	1.7616E-04
2	1.7416E-03	-2.5017E-03	1.8296E-04	-5.9117E-06	9.4875E-06	1.7616E-04
3	2.5343E-03	-2.5017E-03	2.0957E-04	-5.9117E-06	9.4875E-06	1.7616E-04
4	3.3270E-03	-2.5017E-03	2.3617E-04	-5.9117E-06	9.4875E-06	1.7616E-04
5	9.0624E-04	-2.5283E-03	1.5636E-04	-5.9117E-06	9.4875E-06	1.7616E-04
6	1.6990E-03	-2.5283E-03	1.8296E-04	-5.9117E-06	9.4875E-06	1.7616E-04
7	2.4917E-03	-2.5283E-03	2.0957E-04	-5.9117E-06	9.4875E-06	1.7616E-04
8	3.2844E-03	-2.5283E-03	2.3617E-04	-5.9117E-06	9.4875E-06	1.7616E-04
9	8.6355E-04	-2.5549E-03	1.5636E-04	-5.9117E-06	9.4875E-06	1.7616E-04
10	1.6562E-03	-2.5549E-03	1.8296E-04	-5.9117E-06	9.4875E-06	1.7616E-04
11	2.4490E-03	-2.5549E-03	2.0957E-04	-5.9117E-06	9.4875E-06	1.7616E-04
12	3.2417E-03	-2.5549E-03	2.3617E-04	-5.9117E-06	9.4875E-06	1.7616E-04
13	8.2086E-04	-2.5815E-03	1.5636E-04	-5.9117E-06	9.4875E-06	1.7616E-04
14	1.6136E-03	-2.5815E-03	1.8296E-04	-5.9117E-06	9.4875E-06	1.7616E-04
15	2.4063E-03	-2.5815E-03	2.0957E-04	-5.9117E-06	9.4875E-06	1.7616E-04
16	3.1990E-03	-2.5815E-03	2.3617E-04	-5.9117E-06	9.4875E-06	1.7616E-04
17	7.7816E-04	-2.6081E-03	1.5636E-04	-5.9117E-06	9.4875E-06	1.7616E-04
18	1.5709E-03	-2.6081E-03	1.8296E-04	-5.9117E-06	9.4875E-06	1.7616E-04
19	2.3636E-03	-2.6081E-03	2.0957E-04	-5.9117E-06	9.4875E-06	1.7616E-04
20	3.1563E-03	-2.6081E-03	2.3617E-04	-5.9117E-06	9.4875E-06	1.7616E-04
MINIMUM	7.7816E-04	-2.6081E-03	1.5636E-04	-5.9117E-06	9.4875E-06	1.7616E-04

APPALTATORE:

Consorzio

Soci



ITINERARIO NAPOLI – BARI

PROGETTAZIONE:

Mandatario

Mandanti



RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

PROGETTO ESECUTIVO

RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 280 di 354
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Pile N.	17	17	1	1	1	1
MAXIMUM	3.3270E-03	-2.5017E-03	2.3617E-04	-5.9117E-06	9.4875E-06	1.7616E-04
Pile N.	4	1	4	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	1560.8	-470.76	30.592	-2.0843	-84.110	-1253.5
2	2859.8	-450.38	35.480	-2.0843	-101.46	-1213.7
3	3798.1	-467.07	43.155	-2.0843	-124.42	-1247.7
4	4674.2	-602.23	63.222	-2.0843	-171.91	-1512.3
5	1490.8	-430.24	27.623	-2.0843	-78.067	-1178.8
6	2789.8	-411.35	32.062	-2.0843	-94.363	-1140.6
7	3750.9	-428.96	39.244	-2.0843	-116.38	-1177.7
8	4627.1	-584.91	60.702	-2.0843	-167.35	-1490.7
9	1420.8	-434.77	27.540	-2.0843	-77.865	-1194.8
10	2719.9	-415.70	31.966	-2.0843	-94.126	-1156.2
11	3703.7	-433.49	39.129	-2.0843	-116.10	-1193.7
12	4579.9	-592.03	60.637	-2.0843	-167.19	-1512.3
13	1350.9	-440.53	27.534	-2.0843	-77.824	-1213.3
14	2649.9	-421.23	31.958	-2.0843	-94.077	-1174.3
15	3656.5	-439.24	39.120	-2.0843	-116.04	-1212.2
16	4532.7	-589.44	59.595	-2.0843	-164.20	-1505.8
17	1280.9	-492.73	30.359	-2.0843	-83.522	-1325.6
18	2579.9	-471.30	35.197	-2.0843	-100.74	-1283.6
19	3609.3	-488.85	42.828	-2.0843	-123.59	-1319.5
20	4485.5	-631.50	62.927	-2.0843	-171.23	-1600.2
MINIMUM	1280.9	-631.50	27.534	-2.0843	-171.91	-1600.2
Pile N.	17	20	13	1	4	20
MAXIMUM	4674.2	-411.35	63.222	-2.0843	-77.824	-1140.6
Pile N.	4	6	4	1	13	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	9.4894E-04	-2.5017E-03	1.5636E-04	-5.9117E-06	9.4875E-06	1.7616E-04
2	1.7416E-03	-2.5017E-03	1.8296E-04	-5.9117E-06	9.4875E-06	1.7616E-04
3	2.5343E-03	-2.5017E-03	2.0957E-04	-5.9117E-06	9.4875E-06	1.7616E-04
4	3.3270E-03	-2.5017E-03	2.3617E-04	-5.9117E-06	9.4875E-06	1.7616E-04
5	9.0624E-04	-2.5283E-03	1.5636E-04	-5.9117E-06	9.4875E-06	1.7616E-04
6	1.6990E-03	-2.5283E-03	1.8296E-04	-5.9117E-06	9.4875E-06	1.7616E-04
7	2.4917E-03	-2.5283E-03	2.0957E-04	-5.9117E-06	9.4875E-06	1.7616E-04
8	3.2844E-03	-2.5283E-03	2.3617E-04	-5.9117E-06	9.4875E-06	1.7616E-04
9	8.6355E-04	-2.5549E-03	1.5636E-04	-5.9117E-06	9.4875E-06	1.7616E-04
10	1.6562E-03	-2.5549E-03	1.8296E-04	-5.9117E-06	9.4875E-06	1.7616E-04
11	2.4490E-03	-2.5549E-03	2.0957E-04	-5.9117E-06	9.4875E-06	1.7616E-04
12	3.2417E-03	-2.5549E-03	2.3617E-04	-5.9117E-06	9.4875E-06	1.7616E-04
13	8.2086E-04	-2.5815E-03	1.5636E-04	-5.9117E-06	9.4875E-06	1.7616E-04
14	1.6136E-03	-2.5815E-03	1.8296E-04	-5.9117E-06	9.4875E-06	1.7616E-04
15	2.4063E-03	-2.5815E-03	2.0957E-04	-5.9117E-06	9.4875E-06	1.7616E-04
16	3.1990E-03	-2.5815E-03	2.3617E-04	-5.9117E-06	9.4875E-06	1.7616E-04
17	7.7816E-04	-2.6081E-03	1.5636E-04	-5.9117E-06	9.4875E-06	1.7616E-04
18	1.5709E-03	-2.6081E-03	1.8296E-04	-5.9117E-06	9.4875E-06	1.7616E-04
19	2.3636E-03	-2.6081E-03	2.0957E-04	-5.9117E-06	9.4875E-06	1.7616E-04
20	3.1563E-03	-2.6081E-03	2.3617E-04	-5.9117E-06	9.4875E-06	1.7616E-04
MINIMUM	7.7816E-04	-2.6081E-03	1.5636E-04	-5.9117E-06	9.4875E-06	1.7616E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	3.3270E-03	-2.5017E-03	2.3617E-04	-5.9117E-06	9.4875E-06	1.7616E-04
Pile N.	4	1	4	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	1560.8	-470.76	30.592	-2.0843	-84.110	-1253.5
2	2859.8	-450.38	35.480	-2.0843	-101.46	-1213.7
3	3798.1	-467.07	43.155	-2.0843	-124.42	-1247.7
4	4674.2	-602.23	63.222	-2.0843	-171.91	-1512.3
5	1490.8	-430.24	27.623	-2.0843	-78.067	-1178.8
6	2789.8	-411.35	32.062	-2.0843	-94.363	-1140.6
7	3750.9	-428.96	39.244	-2.0843	-116.38	-1177.7
8	4627.1	-584.91	60.702	-2.0843	-167.35	-1490.7
9	1420.8	-434.77	27.540	-2.0843	-77.865	-1194.8
10	2719.9	-415.70	31.966	-2.0843	-94.126	-1156.2
11	3703.7	-433.49	39.129	-2.0843	-116.10	-1193.7
12	4579.9	-592.03	60.637	-2.0843	-167.19	-1512.3
13	1350.9	-440.53	27.534	-2.0843	-77.824	-1213.3
14	2649.9	-421.23	31.958	-2.0843	-94.077	-1174.3
15	3656.5	-439.24	39.120	-2.0843	-116.04	-1212.2
16	4532.7	-589.44	59.595	-2.0843	-164.20	-1505.8





<p><b>APPALTATORE:</b></p> <p>Consorzio <span style="float:right">Soci</span></p> <p><b>PROGETTAZIONE:</b></p> <p>Mandatario <span style="float:right">Mandanti</span></p> <p><b>PROGETTO ESECUTIVO</b></p> <p><b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b></p>	<h2 style="margin:0;">ITINERARIO NAPOLI – BARI</h2> <h3 style="margin:0;">RADDOPPIO TRATTA APICE – ORSARA I LOTTO FUNZIONALE APICE – HIRPINIA</h3>
<p><b>COMMESSA</b> IF28      <b>LOTTO</b> 01      <b>CODIFICA</b> E ZZ CL      <b>DOCUMENTO</b> VI0403 001      <b>REV.</b> B      <b>FOGLIO</b> 282 di 354</p>	

Pile N.	17	11	20	4	20	4	20	4	17	1	1
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\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
*****											
1	5.5142E-05	1.5636E-04	1253.5	39.379	151.57	30.594	42.482	10.109	4674.8	7.8279E+06	7.8279E+06
x( M)	10.980	0.0000	0.0000	6.4800	8.8200	0.0000	11.340	5.0400	0.0000	0.0000	0.0000
2	5.7159E-05	1.8296E-04	1213.7	45.218	145.00	35.483	40.490	11.471	5294.1	7.8279E+06	7.8279E+06
x( M)	11.160	0.0000	0.0000	6.6600	9.0000	0.0000	11.520	5.0400	0.0000	0.0000	0.0000
3	5.5509E-05	2.0957E-04	1247.7	53.467	150.77	43.161	42.210	14.056	5933.5	7.8279E+06	7.8279E+06
x( M)	10.980	0.0000	0.0000	6.4800	8.8200	0.0000	11.340	5.0400	0.0000	0.0000	0.0000
4	4.8934E-05	2.3617E-04	1512.3	72.975	198.97	63.231	58.239	22.948	7238.7	7.8279E+06	7.8279E+06
x( M)	10.080	0.0000	0.0000	6.1200	8.2800	0.0000	10.260	5.0400	0.0000	0.0000	0.0000
5	6.0616E-05	1.5636E-04	1178.8	36.726	137.18	27.625	38.139	8.7855	4409.0	7.8279E+06	7.8279E+06
x( M)	11.520	0.0000	0.0000	6.6600	9.1800	0.0000	11.700	5.0400	0.0000	0.0000	0.0000
6	6.2817E-05	1.8296E-04	1140.6	42.139	131.04	32.065	36.248	9.9578	5033.0	7.8279E+06	7.8279E+06
x( M)	11.520	0.0000	0.0000	6.8400	9.1800	0.0000	11.880	5.0400	0.0000	0.0000	0.0000
7	6.0808E-05	2.0957E-04	1177.7	50.034	137.20	39.249	38.108	12.303	5694.2	7.8279E+06	7.8279E+06
x( M)	11.520	0.0000	0.0000	6.6600	9.1800	0.0000	11.700	5.0400	0.0000	0.0000	0.0000
8	5.0398E-05	2.3617E-04	1490.7	71.351	193.96	60.710	56.540	21.764	7145.5	7.8279E+06	7.8279E+06
x( M)	10.260	0.0000	0.0000	6.3000	8.2800	0.0000	10.440	5.0400	0.0000	0.0000	0.0000
9	6.1481E-05	1.5636E-04	1194.8	36.605	138.12	27.541	38.363	8.7201	4417.5	7.8279E+06	7.8279E+06
x( M)	11.520	0.0000	0.0000	6.6600	9.1800	0.0000	11.880	5.0400	0.0000	0.0000	0.0000
10	6.3707E-05	1.8296E-04	1156.2	42.004	131.969	31.969	36.451	9.8835	5040.3	7.8279E+06	7.8279E+06
x( M)	11.700	0.0000	0.0000	6.8400	9.1800	0.0000	12.060	5.0400	0.0000	0.0000	0.0000
11	6.1674E-05	2.0957E-04	1193.7	49.865	138.15	39.134	38.335	12.213	5715.6	7.8279E+06	7.8279E+06
x( M)	11.520	0.0000	0.0000	6.6600	9.1800	0.0000	11.880	5.0400	0.0000	0.0000	0.0000
12	5.0919E-05	2.3617E-04	1512.3	71.249	195.88	60.646	57.141	21.653	7183.6	7.8279E+06	7.8279E+06
x( M)	10.260	0.0000	0.0000	6.3000	8.2800	0.0000	10.440	5.0400	0.0000	0.0000	0.0000
13	6.2197E-05	1.5636E-04	1213.3	36.555	139.46	27.536	38.710	8.6886	4433.7	7.8279E+06	7.8279E+06
x( M)	11.520	0.0000	0.0000	6.6600	9.1800	0.0000	11.880	5.0400	0.0000	0.0000	0.0000
14	6.4453E-05	1.8296E-04	1174.3	41.948	133.16	31.961	36.781	9.8477	5054.9	7.8279E+06	7.8279E+06
x( M)	11.700	0.0000	0.0000	6.8400	9.1800	0.0000	12.060	5.0400	0.0000	0.0000	0.0000
15	6.2393E-05	2.0957E-04	1212.2	49.794	139.50	39.125	38.684	12.169	5744.5	7.8279E+06	7.8279E+06
x( M)	11.520	0.0000	0.0000	6.6600	9.1800	0.0000	11.880	5.0400	0.0000	0.0000	0.0000
16	4.9858E-05	2.3617E-04	1505.8	68.460	188.82	59.604	54.130	20.394	7136.5	7.8279E+06	7.8279E+06
x( M)	10.440	0.0000	0.0000	6.3000	8.4600	0.0000	10.440	5.0400	0.0000	0.0000	0.0000
17	5.8066E-05	1.5636E-04	1325.6	38.977	156.29	30.361	43.684	9.8680	4733.5	7.8279E+06	7.8279E+06
x( M)	11.160	0.0000	0.0000	6.4800	9.0000	0.0000	11.340	5.0400	0.0000	0.0000	0.0000
18	6.0221E-05	1.8296E-04	1283.6	44.756	149.61	35.200	41.629	11.193	5345.9	7.8279E+06	7.8279E+06
x( M)	11.340	0.0000	0.0000	6.6600	9.0000	0.0000	11.520	5.0400	0.0000	0.0000	0.0000
19	5.8496E-05	2.0957E-04	1319.5	52.933	155.54	42.833	43.404	13.723	6042.2	7.8279E+06	7.8279E+06
x( M)	11.160	0.0000	0.0000	6.6600	9.0000	0.0000	11.520	5.0400	0.0000	0.0000	0.0000
20	5.0919E-05	2.3617E-04	1600.2	72.497	206.91	62.935	60.725	22.478	7395.3	7.8279E+06	7.8279E+06
x( M)	10.080	0.0000	0.0000	6.1200	8.2800	0.0000	10.440	5.0400	0.0000	0.0000	0.0000
Max.	6.4453E-05	2.3617E-04	1600.2	72.975	206.91	63.231	60.725	22.948	7395.3	7.8279E+06	7.8279E+06
Pile N.	14	4	20	4	20	4	20	4	20	1	1

LOAD CASE : 9  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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	0.5955	1.0000
2	0.5546	1.0000
3	0.5876	1.0000
4	0.8661	1.0000
5	0.4984	1.0000
6	0.4626	1.0000
7	0.4951	1.0000
8	0.7991	1.0000
9	0.4961	1.0000
10	0.4606	1.0000
11	0.4931	1.0000
12	0.7983	1.0000
13	0.4971	1.0000
14	0.4615	1.0000
15	0.4941	1.0000
16	0.7983	1.0000
17	0.5845	1.0000
18	0.5430	1.0000
19	0.5766	1.0000
20	0.8586	1.0000

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>				
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>					
<b>COMMESSA</b> <b>IF28</b>	<b>LOTTO</b> <b>01</b>	<b>CODIFICA</b> <b>E ZZ CL</b>	<b>DOCUMENTO</b> <b>VI0403 001</b>	<b>REV.</b> <b>B</b>	<b>FOGLIO</b> <b>283 di 354</b>

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN 43281.8	HOR. LOAD Y, KN -5560.41	HOR. LOAD Z, KN 1074.70
MOMENT X, KN- M -2681.66	MOMENT Y, KN- M 11403.5	MOMENT Z, KN- M 51954.7

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL, M 1.32030E-03	HORIZONTAL Y, M -1.32240E-03	HORIZONTAL Z, M 2.39124E-04
ANGLE ROT. X, RAD -6.70135E-06	ANGLE ROT. Y, RAD 1.14197E-05	ANGLE ROT. Z, RAD 8.17731E-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	8.7111E-04	-1.2621E-03	1.9389E-04	-6.7013E-06	1.1420E-05	8.1773E-05
2	1.2391E-03	-1.2621E-03	2.2405E-04	-6.7013E-06	1.1420E-05	8.1773E-05
3	1.6071E-03	-1.2621E-03	2.5420E-04	-6.7013E-06	1.1420E-05	8.1773E-05
4	1.9750E-03	-1.2621E-03	2.8436E-04	-6.7013E-06	1.1420E-05	8.1773E-05
5	8.1972E-04	-1.2922E-03	1.9389E-04	-6.7013E-06	1.1420E-05	8.1773E-05
6	1.1877E-03	-1.2922E-03	2.2405E-04	-6.7013E-06	1.1420E-05	8.1773E-05
7	1.5575E-03	-1.2922E-03	2.5420E-04	-6.7013E-06	1.1420E-05	8.1773E-05
8	1.9237E-03	-1.2922E-03	2.8436E-04	-6.7013E-06	1.1420E-05	8.1773E-05
9	7.6833E-04	-1.3224E-03	1.9389E-04	-6.7013E-06	1.1420E-05	8.1773E-05
10	1.1363E-03	-1.3224E-03	2.2405E-04	-6.7013E-06	1.1420E-05	8.1773E-05
11	1.5043E-03	-1.3224E-03	2.5420E-04	-6.7013E-06	1.1420E-05	8.1773E-05
12	1.8723E-03	-1.3224E-03	2.8436E-04	-6.7013E-06	1.1420E-05	8.1773E-05
13	7.1695E-04	-1.3526E-03	1.9389E-04	-6.7013E-06	1.1420E-05	8.1773E-05
14	1.0849E-03	-1.3526E-03	2.2405E-04	-6.7013E-06	1.1420E-05	8.1773E-05
15	1.4529E-03	-1.3526E-03	2.5420E-04	-6.7013E-06	1.1420E-05	8.1773E-05
16	1.8209E-03	-1.3526E-03	2.8436E-04	-6.7013E-06	1.1420E-05	8.1773E-05
17	6.6556E-04	-1.3827E-03	1.9389E-04	-6.7013E-06	1.1420E-05	8.1773E-05
18	1.0335E-03	-1.3827E-03	2.2405E-04	-6.7013E-06	1.1420E-05	8.1773E-05
19	1.4015E-03	-1.3827E-03	2.5420E-04	-6.7013E-06	1.1420E-05	8.1773E-05
20	1.7695E-03	-1.3827E-03	2.8436E-04	-6.7013E-06	1.1420E-05	8.1773E-05
MINIMUM	6.6556E-04	-1.3827E-03	1.9389E-04	-6.7013E-06	1.1420E-05	8.1773E-05
Pile N.	17	17	1	1	1	1
MAXIMUM	1.9750E-03	-1.2621E-03	2.8436E-04	-6.7013E-06	1.1420E-05	8.1773E-05
Pile N.	4	1	4	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	1433.2	-265.59	41.745	-2.3627	-114.88	-718.41
2	2036.2	-255.56	47.866	-2.3627	-136.25	-699.41
3	2639.3	-263.34	57.187	-2.3627	-163.78	-714.42
4	3179.9	-324.02	79.475	-2.3627	-215.07	-825.05
5	1349.0	-248.51	37.950	-2.3627	-107.48	-694.59
6	1952.0	-238.76	43.500	-2.3627	-127.58	-675.43
7	2555.1	-247.29	52.278	-2.3627	-154.12	-692.51
8	3123.1	-318.95	76.103	-2.3627	-208.96	-826.69
9	1264.8	-254.76	37.796	-2.3627	-107.13	-715.76
10	1867.8	-237.48	42.041	-2.3627	-123.50	-675.23
11	2470.8	-253.56	52.081	-2.3627	-153.67	-713.75
12	3066.3	-327.47	75.956	-2.3627	-208.61	-852.31
13	1180.6	-261.87	37.774	-2.3627	-107.04	-738.63
14	1783.6	-243.96	41.986	-2.3627	-123.30	-696.44
15	2386.6	-260.66	52.053	-2.3627	-153.56	-736.58
16	2989.7	-336.14	75.850	-2.3627	-208.34	-878.18
17	1096.4	-292.62	41.071	-2.3627	-113.39	-807.31
18	1699.4	-281.26	47.034	-2.3627	-134.40	-785.64
19	2302.4	-290.13	56.274	-2.3627	-161.75	-802.89
20	2905.4	-358.50	78.674	-2.3627	-213.29	-928.27
MINIMUM	1096.4	-358.50	37.774	-2.3627	-215.07	-928.27
Pile N.	17	20	13	1	4	20
MAXIMUM	3179.9	-237.48	79.475	-2.3627	-107.04	-675.23
Pile N.	4	10	4	1	13	10

THE PILE COORDINATE SYSTEM (LOCAL AXES)

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>						<b>COMMESSA</b> <b>IF28</b>	<b>LOTTO</b> <b>01</b>

\* PILE TOP DISPLACEMENTS \*

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	8.7111E-04	-1.2621E-03	1.9389E-04	-6.7013E-06	1.1420E-05	8.1773E-05
2	1.2391E-03	-1.2621E-03	2.2405E-04	-6.7013E-06	1.1420E-05	8.1773E-05
3	1.6071E-03	-1.2621E-03	2.5420E-04	-6.7013E-06	1.1420E-05	8.1773E-05
4	1.9750E-03	-1.2621E-03	2.8436E-04	-6.7013E-06	1.1420E-05	8.1773E-05
5	8.1972E-04	-1.2922E-03	1.9389E-04	-6.7013E-06	1.1420E-05	8.1773E-05
6	1.1877E-03	-1.2922E-03	2.2405E-04	-6.7013E-06	1.1420E-05	8.1773E-05
7	1.5557E-03	-1.2922E-03	2.5420E-04	-6.7013E-06	1.1420E-05	8.1773E-05
8	1.9237E-03	-1.2922E-03	2.8436E-04	-6.7013E-06	1.1420E-05	8.1773E-05
9	7.6833E-04	-1.3224E-03	1.9389E-04	-6.7013E-06	1.1420E-05	8.1773E-05
10	1.1363E-03	-1.3224E-03	2.2405E-04	-6.7013E-06	1.1420E-05	8.1773E-05
11	1.5043E-03	-1.3224E-03	2.5420E-04	-6.7013E-06	1.1420E-05	8.1773E-05
12	1.8723E-03	-1.3224E-03	2.8436E-04	-6.7013E-06	1.1420E-05	8.1773E-05
13	7.1695E-04	-1.3526E-03	1.9389E-04	-6.7013E-06	1.1420E-05	8.1773E-05
14	1.0849E-03	-1.3526E-03	2.2405E-04	-6.7013E-06	1.1420E-05	8.1773E-05
15	1.4529E-03	-1.3526E-03	2.5420E-04	-6.7013E-06	1.1420E-05	8.1773E-05
16	1.8209E-03	-1.3526E-03	2.8436E-04	-6.7013E-06	1.1420E-05	8.1773E-05
17	6.6556E-04	-1.3827E-03	1.9389E-04	-6.7013E-06	1.1420E-05	8.1773E-05
18	1.0335E-03	-1.3827E-03	2.2405E-04	-6.7013E-06	1.1420E-05	8.1773E-05
19	1.4015E-03	-1.3827E-03	2.5420E-04	-6.7013E-06	1.1420E-05	8.1773E-05
20	1.7695E-03	-1.3827E-03	2.8436E-04	-6.7013E-06	1.1420E-05	8.1773E-05
MINIMUM	6.6556E-04	-1.3827E-03	1.9389E-04	-6.7013E-06	1.1420E-05	8.1773E-05
Pile N.	17	17	1	1	1	1
MAXIMUM	1.9750E-03	-1.2621E-03	2.8436E-04	-6.7013E-06	1.1420E-05	8.1773E-05
Pile N.	4	1	4	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	1433.2	-265.59	41.745	-2.3627	-114.88	-718.41
2	2036.2	-255.56	47.866	-2.3627	-136.25	-699.41
3	2639.3	-263.34	57.187	-2.3627	-163.78	-714.42
4	3179.9	-324.02	79.475	-2.3627	-215.07	-825.05
5	1349.0	-248.51	37.950	-2.3627	-107.48	-694.59
6	1952.0	-238.76	43.500	-2.3627	-127.58	-675.43
7	2555.1	-247.29	52.278	-2.3627	-154.12	-692.51
8	3123.1	-318.95	76.103	-2.3627	-208.96	-826.69
9	1264.8	-254.76	37.796	-2.3627	-107.13	-715.76
10	1867.8	-237.48	42.041	-2.3627	-123.50	-675.23
11	2470.8	-253.56	52.081	-2.3627	-153.67	-713.75
12	3066.3	-327.47	75.956	-2.3627	-208.61	-852.31
13	1180.6	-261.87	37.774	-2.3627	-107.04	-738.63
14	1783.6	-243.96	41.986	-2.3627	-123.30	-696.44
15	2386.6	-260.66	52.053	-2.3627	-153.56	-736.58
16	2989.7	-336.14	75.850	-2.3627	-208.34	-878.18
17	1096.4	-292.62	41.071	-2.3627	-113.39	-807.31
18	1699.4	-281.26	47.034	-2.3627	-134.40	-785.64
19	2302.4	-290.13	56.274	-2.3627	-161.75	-802.89
20	2905.4	-358.50	78.674	-2.3627	-213.29	-928.27
MINIMUM	1096.4	-358.50	37.774	-2.3627	-215.07	-928.27
Pile N.	17	20	13	1	4	20
MAXIMUM	3179.9	-237.48	79.475	-2.3627	-107.04	-675.23
Pile N.	4	10	4	1	13	10

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

PILE GROUP	STRESS, KN/ M**2
*****	*****
1	3006.8
2	3302.8
3	3705.6
4	4372.7
5	2884.7
6	3179.1
7	3587.0
8	4340.8
9	2900.0
10	3128.7
11	3601.7
12	4383.4
13	2920.6
14	3143.9
15	3621.4
16	4415.8
17	3080.8
18	3367.2
19	3774.7
20	4518.7
MINIMUM	2884.7
Pile N.	5
MAXIMUM	4518.7
Pile N.	20



<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>				
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>					
<b>COMMESSA</b> <b>IF28</b>	<b>LOTTO</b> <b>01</b>	<b>CODIFICA</b> <b>E ZZ CL</b>	<b>DOCUMENTO</b> <b>VI0403 001</b>	<b>REV.</b> <b>B</b>	<b>FOGLIO</b> <b>286 di 354</b>

16	2.8970E-05	2.8436E-04	878.18	90.918	110.53	75.858	31.706	32.996	4415.8	7.8279E+06	7.8279E+06
x( M)	10.080	0.0000	0.0000	6.1200	8.1000	0.0000	10.260	5.0400	0.0000	0.0000	0.0000
17	3.2308E-05	1.9389E-04	807.31	54.946	96.243	41.072	27.415	17.312	3080.8	7.8279E+06	7.8279E+06
x( M)	10.620	0.0000	0.0000	6.3000	8.4600	0.0000	10.980	5.0400	0.0000	0.0000	0.0000
18	3.3096E-05	2.2405E-04	785.64	62.614	92.569	47.036	26.470	19.454	3367.2	7.8279E+06	7.8279E+06
x( M)	10.620	0.0000	0.0000	6.3000	8.6400	0.0000	11.160	5.0400	0.0000	0.0000	0.0000
19	3.2472E-05	2.5420E-04	802.89	72.916	95.554	56.279	27.247	23.346	3774.7	7.8279E+06	7.8279E+06
x( M)	10.620	0.0000	0.0000	6.3000	8.4600	0.0000	10.980	5.0400	0.0000	0.0000	0.0000
20	2.9131E-05	2.8436E-04	928.27	92.630	117.19	78.681	33.849	34.196	4518.7	7.8279E+06	7.8279E+06
x( M)	9.9000	0.0000	0.0000	6.1200	8.1000	0.0000	10.260	5.0400	0.0000	0.0000	0.0000
Max.	3.3465E-05	2.8436E-04	928.27	93.738	117.19	79.483	33.849	35.870	4518.7	7.8279E+06	7.8279E+06
Pile N.	15	4	20	4	20	4	20	4	20	1	1

LOAD CASE : 10  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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	0.5867	1.0000
2	0.5464	1.0000
3	0.5807	1.0000
4	0.8661	1.0000
5	0.4961	1.0000
6	0.4618	1.0000
7	0.4951	1.0000
8	0.8041	1.0000
9	0.4948	1.0000
10	0.4606	1.0000
11	0.4939	1.0000
12	0.8040	1.0000
13	0.4958	1.0000
14	0.4615	1.0000
15	0.4949	1.0000
16	0.8040	1.0000
17	0.5845	1.0000
18	0.5442	1.0000
19	0.5786	1.0000
20	0.8646	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
64721.6	-10750.9	951.681
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-2887.21	8951.88	1.16253E+05

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
2.22975E-03	-2.98238E-03	2.33858E-04
ANGLE ROT. X, RAD	ANGLE ROT. Y, RAD	ANGLE ROT. Z, RAD
-8.15220E-06	1.20575E-05	2.29851E-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	7.8677E-04	-2.9090E-03	1.7883E-04	-8.1522E-06	1.2057E-05	2.2985E-04
2	1.8211E-03	-2.9090E-03	2.1551E-04	-8.1522E-06	1.2057E-05	2.2985E-04
3	2.8554E-03	-2.9090E-03	2.5220E-04	-8.1522E-06	1.2057E-05	2.2985E-04
4	3.8898E-03	-2.9090E-03	2.8889E-04	-8.1522E-06	1.2057E-05	2.2985E-04
5	7.3252E-04	-2.9457E-03	1.7883E-04	-8.1522E-06	1.2057E-05	2.2985E-04
6	1.7668E-03	-2.9457E-03	2.1551E-04	-8.1522E-06	1.2057E-05	2.2985E-04
7	2.8012E-03	-2.9457E-03	2.5220E-04	-8.1522E-06	1.2057E-05	2.2985E-04
8	3.8355E-03	-2.9457E-03	2.8889E-04	-8.1522E-06	1.2057E-05	2.2985E-04
9	6.7826E-04	-2.9824E-03	1.7883E-04	-8.1522E-06	1.2057E-05	2.2985E-04
10	1.7126E-03	-2.9824E-03	2.1551E-04	-8.1522E-06	1.2057E-05	2.2985E-04

APPALTATORE:

Consorzio

Soci



ITINERARIO NAPOLI – BARI

PROGETTAZIONE:

Mandatario

Mandanti



RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

PROGETTO ESECUTIVO

RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 287 di 354
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11	2.7469E-03	-2.9824E-03	2.5220E-04	-8.1522E-06	1.2057E-05	2.2985E-04
12	3.7812E-03	-2.9824E-03	2.8889E-04	-8.1522E-06	1.2057E-05	2.2985E-04
13	6.2400E-04	-3.0191E-03	1.7883E-04	-8.1522E-06	1.2057E-05	2.2985E-04
14	1.6583E-03	-3.0191E-03	2.1551E-04	-8.1522E-06	1.2057E-05	2.2985E-04
15	2.6926E-03	-3.0191E-03	2.5220E-04	-8.1522E-06	1.2057E-05	2.2985E-04
16	3.7270E-03	-3.0191E-03	2.8889E-04	-8.1522E-06	1.2057E-05	2.2985E-04
17	5.6974E-04	-3.0557E-03	1.7883E-04	-8.1522E-06	1.2057E-05	2.2985E-04
18	1.6041E-03	-3.0557E-03	2.1551E-04	-8.1522E-06	1.2057E-05	2.2985E-04
19	2.6384E-03	-3.0557E-03	2.5220E-04	-8.1522E-06	1.2057E-05	2.2985E-04
20	3.6727E-03	-3.0557E-03	2.8889E-04	-8.1522E-06	1.2057E-05	2.2985E-04

MINIMUM	5.6974E-04	-3.0557E-03	1.7883E-04	-8.1522E-06	1.2057E-05	2.2985E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	3.8898E-03	-2.9090E-03	2.8889E-04	-8.1522E-06	1.2057E-05	2.2985E-04
Pile N.	4	1	4	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	1295.0	-520.74	33.586	-2.8742	-90.429	-1344.1
2	2990.0	-497.55	40.541	-2.8742	-114.73	-1299.3
3	4153.0	-516.29	50.713	-2.8742	-145.50	-1337.6
4	5023.0	-670.51	76.115	-2.8742	-206.64	-1640.2
5	1206.1	-476.07	30.256	-2.8742	-83.650	-1263.9
6	2901.1	-454.54	36.566	-2.8742	-106.46	-1220.9
7	4093.0	-474.34	46.047	-2.8742	-135.89	-1262.7
8	5002.5	-640.70	71.730	-2.8742	-197.26	-1586.9
9	1117.2	-482.33	30.150	-2.8742	-83.394	-1285.9
10	2812.2	-460.53	36.438	-2.8742	-106.15	-1242.3
11	4033.0	-480.59	45.890	-2.8742	-135.51	-1284.8
12	4981.9	-649.96	71.607	-2.8742	-196.97	-1615.3
13	1028.3	-489.97	30.131	-2.8742	-83.316	-1310.8
14	2723.3	-467.86	36.413	-2.8742	-106.05	-1266.5
15	3973.1	-488.21	45.861	-2.8742	-135.39	-1309.6
16	4961.4	-659.27	71.493	-2.8742	-196.69	-1643.8
17	939.35	-550.54	33.270	-2.8742	-89.641	-1442.4
18	2634.4	-525.91	40.143	-2.8742	-113.72	-1394.6
19	3913.1	-545.82	50.240	-2.8742	-144.32	-1435.5
20	4940.8	-699.20	74.493	-2.8742	-202.24	-1728.7
MINIMUM	939.35	-699.20	30.131	-2.8742	-206.64	-1728.7
Pile N.	17	20	13	1	4	20
MAXIMUM	5023.0	-454.54	76.115	-2.8742	-83.316	-1220.9
Pile N.	4	6	4	1	13	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	7.8677E-04	-2.9090E-03	1.7883E-04	-8.1522E-06	1.2057E-05	2.2985E-04
2	1.8211E-03	-2.9090E-03	2.1551E-04	-8.1522E-06	1.2057E-05	2.2985E-04
3	2.8554E-03	-2.9090E-03	2.5220E-04	-8.1522E-06	1.2057E-05	2.2985E-04
4	3.8898E-03	-2.9090E-03	2.8889E-04	-8.1522E-06	1.2057E-05	2.2985E-04
5	7.3252E-04	-2.9457E-03	1.7883E-04	-8.1522E-06	1.2057E-05	2.2985E-04
6	1.7668E-03	-2.9457E-03	2.1551E-04	-8.1522E-06	1.2057E-05	2.2985E-04
7	2.8012E-03	-2.9457E-03	2.5220E-04	-8.1522E-06	1.2057E-05	2.2985E-04
8	3.8355E-03	-2.9457E-03	2.8889E-04	-8.1522E-06	1.2057E-05	2.2985E-04
9	6.7826E-04	-2.9824E-03	1.7883E-04	-8.1522E-06	1.2057E-05	2.2985E-04
10	1.7126E-03	-2.9824E-03	2.1551E-04	-8.1522E-06	1.2057E-05	2.2985E-04
11	2.7469E-03	-2.9824E-03	2.5220E-04	-8.1522E-06	1.2057E-05	2.2985E-04
12	3.7812E-03	-2.9824E-03	2.8889E-04	-8.1522E-06	1.2057E-05	2.2985E-04
13	6.2400E-04	-3.0191E-03	1.7883E-04	-8.1522E-06	1.2057E-05	2.2985E-04
14	1.6583E-03	-3.0191E-03	2.1551E-04	-8.1522E-06	1.2057E-05	2.2985E-04
15	2.6926E-03	-3.0191E-03	2.5220E-04	-8.1522E-06	1.2057E-05	2.2985E-04
16	3.7270E-03	-3.0191E-03	2.8889E-04	-8.1522E-06	1.2057E-05	2.2985E-04
17	5.6974E-04	-3.0557E-03	1.7883E-04	-8.1522E-06	1.2057E-05	2.2985E-04
18	1.6041E-03	-3.0557E-03	2.1551E-04	-8.1522E-06	1.2057E-05	2.2985E-04
19	2.6384E-03	-3.0557E-03	2.5220E-04	-8.1522E-06	1.2057E-05	2.2985E-04
20	3.6727E-03	-3.0557E-03	2.8889E-04	-8.1522E-06	1.2057E-05	2.2985E-04
MINIMUM	5.6974E-04	-3.0557E-03	1.7883E-04	-8.1522E-06	1.2057E-05	2.2985E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	3.8898E-03	-2.9090E-03	2.8889E-04	-8.1522E-06	1.2057E-05	2.2985E-04
Pile N.	4	1	4	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	1295.0	-520.74	33.586	-2.8742	-90.429	-1344.1
2	2990.0	-497.55	40.541	-2.8742	-114.73	-1299.3
3	4153.0	-516.29	50.713	-2.8742	-145.50	-1337.6
4	5023.0	-670.51	76.115	-2.8742	-206.64	-1640.2

APPALTATORE:

Consorzio

Soci



ITINERARIO NAPOLI – BARI

PROGETTAZIONE:

Mandataria

Mandanti



RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

PROGETTO ESECUTIVO

RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

COMMESSA LOTTO CODIFICA DOCUMENTO REV. FOGLIO  
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5	1206.1	-476.07	30.256	-2.8742	-83.650	-1263.9
6	2901.1	-454.54	36.566	-2.8742	-106.46	-1220.9
7	4093.0	-474.34	46.047	-2.8742	-135.89	-1262.7
8	5002.5	-640.70	71.730	-2.8742	-197.26	-1586.9
9	1117.2	-482.33	30.150	-2.8742	-83.394	-1285.9
10	2812.2	-460.53	36.438	-2.8742	-106.15	-1242.3
11	4033.0	-480.59	45.890	-2.8742	-135.51	-1284.8
12	4981.9	-649.96	71.607	-2.8742	-196.97	-1615.3
13	1028.3	-489.97	30.131	-2.8742	-83.316	-1310.8
14	2723.3	-467.86	36.413	-2.8742	-106.05	-1266.5
15	3973.1	-488.21	45.861	-2.8742	-135.39	-1309.6
16	4961.4	-659.27	71.493	-2.8742	-196.69	-1643.8
17	939.35	-550.54	33.270	-2.8742	-89.641	-1442.4
18	2634.4	-525.91	40.143	-2.8742	-113.72	-1394.6
19	3913.1	-545.82	50.240	-2.8742	-144.32	-1435.5
20	4940.8	-699.20	74.493	-2.8742	-202.24	-1728.7
MINIMUM	939.35	-699.20	30.131	-2.8742	-206.64	-1728.7
Pile N.	17	20	13	1	4	20
MAXIMUM	5023.0	-454.54	76.115	-2.8742	-83.316	-1220.9
Pile N.	4	6	4	1	13	6

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



1	4798.6
2	5628.7
3	6410.9
4	7831.9
5	4505.3
6	5340.3
7	6149.1
8	7657.1
9	4521.3
10	5354.4
11	6181.3
12	7730.4
13	4545.8
14	5376.8
15	6221.9
16	7804.0
17	4893.3
18	5713.7
19	6568.7
20	8048.7
MINIMUM	4505.3
Pile N.	5
MAXIMUM	8048.7
Pile N.	20

\* 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
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	-2.9090E-03	-4.0414E-06	-704.55	-90.429	-520.76	-10.591	-168.29	-2.9280	732.83	7.8279E+06	7.8279E+06
x(M)	0.0000	11.160	6.4800	0.0000	0.0000	9.0000	5.0400	11.520	18.000	0.0000	0.0000
2	-2.9090E-03	-5.1596E-06	-685.51	-114.73	-497.59	-12.399	-158.81	-3.4489	1692.0	7.8279E+06	7.8279E+06
x(M)	0.0000	11.340	6.4800	0.0000	0.0000	9.0000	5.0400	11.700	18.000	0.0000	0.0000
3	-2.9090E-03	-5.9449E-06	-702.03	-145.50	-516.36	-15.283	-166.69	-4.2803	2350.1	7.8279E+06	7.8279E+06
x(M)	0.0000	11.160	6.4800	0.0000	0.0000	9.0000	5.0400	11.700	18.000	0.0000	0.0000
4	-2.9090E-03	-5.8532E-06	-846.60	-206.64	-670.60	-23.538	-239.50	-6.9411	2842.4	7.8279E+06	7.8279E+06
x(M)	0.0000	10.260	6.1200	0.0000	0.0000	8.4600	5.0400	10.800	18.000	0.0000	0.0000
5	-2.9457E-03	-4.3914E-06	-666.03	-83.650	-476.09	-9.4633	-148.25	-2.5914	682.51	7.8279E+06	7.8279E+06
x(M)	0.0000	11.520	6.4800	0.0000	0.0000	9.1800	5.0400	11.880	18.000	0.0000	0.0000
6	-2.9457E-03	-5.5998E-06	-647.42	-106.46	-454.58	-11.047	-139.70	-3.0412	1641.7	7.8279E+06	7.8279E+06
x(M)	0.0000	11.700	6.6600	0.0000	0.0000	9.3600	5.0400	12.240	18.000	0.0000	0.0000
7	-2.9457E-03	-6.4475E-06	-665.76	-135.89	-474.40	-13.706	-147.81	-3.8159	2316.2	7.8279E+06	7.8279E+06
x(M)	0.0000	11.700	6.4800	0.0000	0.0000	9.1800	5.0400	12.060	18.000	0.0000	0.0000
8	-2.9457E-03	-5.8937E-06	-806.02	-197.26	-640.79	-21.527	-217.33	-6.0907	2830.8	7.8279E+06	7.8279E+06
x(M)	0.0000	10.440	6.1200	0.0000	0.0000	8.6400	5.0400	10.800	18.000	0.0000	0.0000
9	-2.9824E-03	-4.4024E-06	-672.31	-83.394	-482.34	-9.4101	-149.26	-2.5712	632.20	7.8279E+06	7.8279E+06
x(M)	0.0000	11.520	6.6600	0.0000	0.0000	9.1800	5.0400	11.880	18.000	0.0000	0.0000
10	-2.9824E-03	-5.6111E-06	-653.62	-106.15	-460.57	-10.983	-140.66	-3.0170	1591.4	7.8279E+06	7.8279E+06
x(M)	0.0000	11.700	6.6600	0.0000	0.0000	9.3600	5.0400	12.240	18.000	0.0000	0.0000
11	-2.9824E-03	-6.4661E-06	-672.10	-135.51	-480.65	-13.626	-148.83	-3.7871	2282.2	7.8279E+06	7.8279E+06
x(M)	0.0000	11.700	6.6600	0.0000	0.0000	9.1800	5.0400	12.060	18.000	0.0000	0.0000
12	-2.9824E-03	-5.9041E-06	-814.74	-196.97	-650.05	-21.455	-219.26	-6.0591	2819.2	7.8279E+06	7.8279E+06
x(M)	0.0000	10.620	6.1200	0.0000	0.0000	8.6400	5.0400	10.800	18.000	0.0000	0.0000
13	-3.0191E-03	-4.4028E-06	-679.99	-83.316	-489.98	-9.3838	-150.84	-2.5598	581.88	7.8279E+06	7.8279E+06
x(M)	0.0000	11.520	6.6600	0.0000	0.0000	9.1800	5.0400	12.060	18.000	0.0000	0.0000
14	-3.0191E-03	-5.6114E-06	-661.02	-106.05	-467.89	-10.954	-142.15	-3.0035	1541.1	7.8279E+06	7.8279E+06
x(M)	0.0000	11.700	6.6600	0.0000	0.0000	9.3600	5.0400	12.240	18.000	0.0000	0.0000
15	-3.0191E-03	-6.4682E-06	-679.79	-135.39	-488.27	-13.587	-150.41	-3.7704	2248.3	7.8279E+06	7.8279E+06
x(M)	0.0000	11.700	6.6600	0.0000	0.0000	9.1800	5.0400	12.060	18.000	0.0000	0.0000



APPALDATTORE: **Consorzio** **Soci**  
  
**ITINERARIO NAPOLI – BARI**  
**RADDOPPIO TRATTA APICE – ORSARA**  
**I LOTTO FUNZIONALE APICE – HIRPINIA**  
**PROGETTAZIONE:**  
**Mandataria** **Mandanti**  
  
**PROGETTO ESECUTIVO**  
**RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B** **COMMESSA** **LOTTO** **CODIFICA** **DOCUMENTO** **REV.** **FOGLIO**  
**IF28** **01** **E ZZ CL** **VI0403 001** **B** **289 di**  
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16	-3.0191E-03	-5.9168E-06	-823.49	-196.69	-659.37	-21.387	-221.21	-6.0284	2807.6	7.8279E+06	7.8279E+06
x( M)	0.0000	10.620	6.1200	0.0000	0.0000	8.6400	5.0400	10.800	18.000	0.0000	0.0000
17	-3.0557E-03	-4.0740E-06	-734.27	-89.641	-550.56	-10.412	-173.86	-2.8574	531.57	7.8279E+06	7.8279E+06
x( M)	0.0000	11.160	6.4800	0.0000	0.0000	9.0000	5.0400	11.520	18.000	0.0000	0.0000
18	-3.0557E-03	-5.1978E-06	-713.77	-113.72	-525.95	-12.172	-164.01	-3.3640	1490.7	7.8279E+06	7.8279E+06
x( M)	0.0000	11.340	6.4800	0.0000	0.0000	9.1800	5.0400	11.880	18.000	0.0000	0.0000
19	-3.0557E-03	-6.0008E-06	-731.63	-144.32	-545.88	-15.011	-172.22	-4.1794	2214.4	7.8279E+06	7.8279E+06
x( M)	0.0000	11.340	6.4800	0.0000	0.0000	9.0000	5.0400	11.700	18.000	0.0000	0.0000
20	-3.0557E-03	-5.7455E-06	-855.65	-202.24	-699.30	-22.237	-236.05	-6.2957	2795.9	7.8279E+06	7.8279E+06
x( M)	0.0000	10.440	6.1200	0.0000	0.0000	8.4600	5.0400	10.620	18.000	0.0000	0.0000
Min.	-3.0557E-03	-6.4682E-06	-855.65	-206.64	-699.30	-23.538	-239.50	-6.9411	531.57	7.8279E+06	7.8279E+06
Pile N.	17	15	20	4	20	4	4	4	17	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	6.4375E-05	1.7883E-04	1344.1	43.853	169.57	33.588	46.464	10.734	4798.6	7.8279E+06	7.8279E+06
x( M)	11.160	0.0000	0.0000	6.4800	8.8200	0.0000	11.340	5.0400	0.0000	0.0000	0.0000
2	6.6728E-05	2.1552E-04	1299.3	52.014	162.34	40.544	44.277	12.650	5628.7	7.8279E+06	7.8279E+06
x( M)	11.160	0.0000	0.0000	6.6600	9.0000	0.0000	11.520	5.0400	0.0000	0.0000	0.0000
3	6.4895E-05	2.5220E-04	1337.6	62.946	168.72	50.720	46.168	15.916	6410.9	7.8279E+06	7.8279E+06
x( M)	11.160	0.0000	0.0000	6.6600	8.8200	0.0000	11.520	5.0400	0.0000	0.0000	0.0000
4	5.6095E-05	2.8889E-04	1640.2	87.869	225.22	76.126	64.836	26.575	7831.9	7.8279E+06	7.8279E+06
x( M)	10.080	0.0000	0.0000	6.3000	8.2800	0.0000	10.800	5.0400	0.0000	0.0000	0.0000
5	7.0911E-05	1.7883E-04	1263.9	40.878	153.65	30.257	41.701	9.3124	4505.3	7.8279E+06	7.8279E+06
x( M)	11.520	0.0000	0.0000	6.6600	9.1800	0.0000	11.880	5.0400	0.0000	0.0000	0.0000
6	7.3397E-05	2.1552E-04	1220.9	48.444	146.67	36.569	39.565	10.963	5340.3	7.8279E+06	7.8279E+06
x( M)	11.700	0.0000	0.0000	6.8400	9.1800	0.0000	12.060	5.0400	0.0000	0.0000	0.0000
7	7.1188E-05	2.5220E-04	1262.7	58.855	153.74	46.053	41.671	13.907	6149.1	7.8279E+06	7.8279E+06
x( M)	11.520	0.0000	0.0000	6.8400	9.1800	0.0000	11.880	5.0400	0.0000	0.0000	0.0000
8	5.6922E-05	2.8889E-04	1586.9	82.316	208.52	71.741	58.215	23.770	7657.1	7.8279E+06	7.8279E+06
x( M)	10.440	0.0000	0.0000	6.3000	8.4600	0.0000	10.620	5.0400	0.0000	0.0000	0.0000
9	7.2113E-05	1.7883E-04	1285.9	40.724	154.92	30.151	41.986	9.2317	4521.3	7.8279E+06	7.8279E+06
x( M)	11.520	0.0000	0.0000	6.6600	9.1800	0.0000	11.880	5.0400	0.0000	0.0000	0.0000
10	7.4622E-05	2.1552E-04	1242.3	48.260	147.77	36.441	39.823	10.869	5354.4	7.8279E+06	7.8279E+06
x( M)	11.700	0.0000	0.0000	6.8400	9.1800	0.0000	12.060	5.0400	0.0000	0.0000	0.0000
11	7.2393E-05	2.5220E-04	1284.8	58.639	155.02	45.897	41.960	13.788	6181.3	7.8279E+06	7.8279E+06
x( M)	11.520	0.0000	0.0000	6.8400	9.1800	0.0000	11.880	5.0400	0.0000	0.0000	0.0000
12	5.7812E-05	2.8889E-04	1615.3	82.095	210.65	71.619	58.716	23.615	7730.4	7.8279E+06	7.8279E+06
x( M)	10.440	0.0000	0.0000	6.3000	8.4600	0.0000	10.620	5.0400	0.0000	0.0000	0.0000
13	7.3139E-05	1.7883E-04	1310.8	40.647	156.59	30.132	42.401	9.1881	4545.8	7.8279E+06	7.8279E+06
x( M)	11.520	0.0000	0.0000	6.6600	9.1800	0.0000	11.880	5.0400	0.0000	0.0000	0.0000
14	7.5686E-05	2.1552E-04	1266.5	48.169	149.33	36.417	40.215	10.817	5376.8	7.8279E+06	7.8279E+06
x( M)	11.700	0.0000	0.0000	6.8400	9.1800	0.0000	12.060	5.0400	0.0000	0.0000	0.0000
15	7.3425E-05	2.5220E-04	1309.6	58.528	156.70	45.867	42.375	13.724	6221.9	7.8279E+06	7.8279E+06
x( M)	11.520	0.0000	0.0000	6.8400	9.1800	0.0000	11.880	5.0400	0.0000	0.0000	0.0000
16	5.8702E-05	2.8889E-04	1643.8	81.884	212.79	71.505	59.219	23.467	7804.0	7.8279E+06	7.8279E+06
x( M)	10.440	0.0000	0.0000	6.3000	8.4600	0.0000	10.620	5.0400	0.0000	0.0000	0.0000
17	6.8600E-05	1.7883E-04	1442.4	43.319	175.97	33.271	48.024	10.429	4893.3	7.8279E+06	7.8279E+06
x( M)	11.160	0.0000	0.0000	6.4800	9.0000	0.0000	11.520	5.0400	0.0000	0.0000	0.0000
18	7.1165E-05	2.1552E-04	1394.6	51.364	168.19	40.146	45.719	12.287	5713.7	7.8279E+06	7.8279E+06
x( M)	11.340	0.0000	0.0000	6.6600	9.0000	0.0000	11.700	5.0400	0.0000	0.0000	0.0000
19	6.9192E-05	2.5220E-04	1435.5	62.186	175.16	50.246	47.719	15.466	6568.7	7.8279E+06	7.8279E+06
x( M)	11.160	0.0000	0.0000	6.6600	9.0000	0.0000	11.520	5.0400	0.0000	0.0000	0.0000
20	5.7856E-05	2.8889E-04	1728.7	83.984	224.45	74.504	62.883	24.661	8048.7	7.8279E+06	7.8279E+06
x( M)	10.260	0.0000	0.0000	6.3000	8.4600	0.0000	10.440	5.0400	0.0000	0.0000	0.0000
Max.	7.5686E-05	2.8889E-04	1728.7	87.869	225.22	76.126	64.836	26.575	8048.7	7.8279E+06	7.8279E+06
Pile N.	14	4	20	4	4	4	4	4	20	1	1

LOAD CASE : 11  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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	0.5910	1.0000
2	0.5504	1.0000
3	0.5841	1.0000
4	0.8661	1.0000
5	0.4972	1.0000
6	0.4622	1.0000
7	0.4951	1.0000
8	0.8017	1.0000
9	0.4954	1.0000
10	0.4606	1.0000
11	0.4935	1.0000
12	0.8012	1.0000
13	0.4965	1.0000

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	

14	0.4615	1.0000
15	0.4945	1.0000
16	0.8012	1.0000
17	0.5845	1.0000
18	0.5436	1.0000
19	0.5776	1.0000
20	0.8617	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN 50790.8	HOR. LOAD Y, KN -8769.18	HOR. LOAD Z, KN 1293.36
MOMENT X, KN- M -3786.85	MOMENT Y, KN- M 15546.0	MOMENT Z, KN- M 90002.8

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL, M 1.62219E-03	HORIZONTAL Y, M -2.27514E-03	HORIZONTAL Z, M 3.12320E-04
ANGLE ROT. X, RAD -9.94928E-06	ANGLE ROT. Y, RAD 1.70499E-05	ANGLE ROT. Z, RAD 1.55278E-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	7.2751E-04	-2.1856E-03	2.4516E-04	-9.9493E-06	1.7050E-05	1.5528E-04
2	1.4263E-03	-2.1856E-03	2.8993E-04	-9.9493E-06	1.7050E-05	1.5528E-04
3	2.1250E-03	-2.1856E-03	3.3471E-04	-9.9493E-06	1.7050E-05	1.5528E-04
4	2.8238E-03	-2.1856E-03	3.7948E-04	-9.9493E-06	1.7050E-05	1.5528E-04
5	6.5079E-04	-2.2304E-03	2.4516E-04	-9.9493E-06	1.7050E-05	1.5528E-04
6	1.3495E-03	-2.2304E-03	2.8993E-04	-9.9493E-06	1.7050E-05	1.5528E-04
7	2.0483E-03	-2.2304E-03	3.3471E-04	-9.9493E-06	1.7050E-05	1.5528E-04
8	2.7471E-03	-2.2304E-03	3.7948E-04	-9.9493E-06	1.7050E-05	1.5528E-04
9	5.7407E-04	-2.2751E-03	2.4516E-04	-9.9493E-06	1.7050E-05	1.5528E-04
10	1.2728E-03	-2.2751E-03	2.8993E-04	-9.9493E-06	1.7050E-05	1.5528E-04
11	1.9716E-03	-2.2751E-03	3.3471E-04	-9.9493E-06	1.7050E-05	1.5528E-04
12	2.6703E-03	-2.2751E-03	3.7948E-04	-9.9493E-06	1.7050E-05	1.5528E-04
13	4.9734E-04	-2.3199E-03	2.4516E-04	-9.9493E-06	1.7050E-05	1.5528E-04
14	1.1961E-03	-2.3199E-03	2.8993E-04	-9.9493E-06	1.7050E-05	1.5528E-04
15	1.8949E-03	-2.3199E-03	3.3471E-04	-9.9493E-06	1.7050E-05	1.5528E-04
16	2.5936E-03	-2.3199E-03	3.7948E-04	-9.9493E-06	1.7050E-05	1.5528E-04
17	4.2062E-04	-2.3647E-03	2.4516E-04	-9.9493E-06	1.7050E-05	1.5528E-04
18	1.1194E-03	-2.3647E-03	2.8993E-04	-9.9493E-06	1.7050E-05	1.5528E-04
19	1.8181E-03	-2.3647E-03	3.3471E-04	-9.9493E-06	1.7050E-05	1.5528E-04
20	2.5169E-03	-2.3647E-03	3.7948E-04	-9.9493E-06	1.7050E-05	1.5528E-04
MINIMUM	4.2062E-04	-2.3647E-03	2.4516E-04	-9.9493E-06	1.7050E-05	1.5528E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	2.8238E-03	-2.1856E-03	3.7948E-04	-9.9493E-06	1.7050E-05	1.5528E-04
Pile N.	4	1	4	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	1197.9	-418.16	47.193	-3.5078	-125.81	-1109.1
2	2343.0	-400.15	55.776	-3.5078	-155.84	-1073.9
3	3345.7	-414.33	68.666	-3.5078	-194.47	-1102.6
4	4118.0	-530.17	100.96	-3.5078	-271.13	-1327.6
5	1072.2	-385.68	42.407	-3.5078	-116.11	-1055.7
6	2217.3	-368.55	50.141	-3.5078	-144.18	-1021.1
7	3260.9	-383.83	62.159	-3.5078	-181.13	-1053.1
8	4033.2	-520.07	96.693	-3.5078	-263.38	-1325.0
9	946.44	-393.80	42.203	-3.5078	-115.61	-1083.8
10	2091.5	-376.34	49.901	-3.5078	-143.57	-1048.4
11	3176.1	-391.97	61.875	-3.5078	-180.42	-1081.2
12	3948.4	-532.14	96.497	-3.5078	-262.90	-1361.6
13	820.71	-403.22	42.146	-3.5078	-115.41	-1114.4
14	1965.8	-385.36	49.829	-3.5078	-143.32	-1078.2
15	3091.3	-401.35	61.790	-3.5078	-180.13	-1111.9
16	3863.6	-544.34	96.332	-3.5078	-262.49	-1398.4
17	694.98	-454.80	46.420	-3.5078	-123.93	-1230.1
18	1840.1	-434.86	54.809	-3.5078	-153.46	-1190.9

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>							<b>COMMESSA</b> <b>IF28</b>

19	2985.1	-450.62	67.555	-3.5078	-191.76	-1223.1
20	3778.8	-579.44	100.01	-3.5078	-268.96	-1475.8
MINIMUM	694.98	-579.44	42.146	-3.5078	-271.13	-1475.8
Pile N.	17	20	13	1	4	20
MAXIMUM	4118.0	-368.55	100.96	-3.5078	-115.41	-1021.1
Pile N.	4	6	4	1	13	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	7.2751E-04	-2.1856E-03	2.4516E-04	-9.9493E-06	1.7050E-05	1.5528E-04
2	1.4263E-03	-2.1856E-03	2.8993E-04	-9.9493E-06	1.7050E-05	1.5528E-04
3	2.1250E-03	-2.1856E-03	3.3471E-04	-9.9493E-06	1.7050E-05	1.5528E-04
4	2.8238E-03	-2.1856E-03	3.7948E-04	-9.9493E-06	1.7050E-05	1.5528E-04
5	6.5079E-04	-2.2304E-03	2.4516E-04	-9.9493E-06	1.7050E-05	1.5528E-04
6	1.3495E-03	-2.2304E-03	2.8993E-04	-9.9493E-06	1.7050E-05	1.5528E-04
7	2.0483E-03	-2.2304E-03	3.3471E-04	-9.9493E-06	1.7050E-05	1.5528E-04
8	2.7471E-03	-2.2304E-03	3.7948E-04	-9.9493E-06	1.7050E-05	1.5528E-04
9	5.7407E-04	-2.2751E-03	2.4516E-04	-9.9493E-06	1.7050E-05	1.5528E-04
10	1.2728E-03	-2.2751E-03	2.8993E-04	-9.9493E-06	1.7050E-05	1.5528E-04
11	1.9716E-03	-2.2751E-03	3.3471E-04	-9.9493E-06	1.7050E-05	1.5528E-04
12	2.6703E-03	-2.2751E-03	3.7948E-04	-9.9493E-06	1.7050E-05	1.5528E-04
13	4.9734E-04	-2.3199E-03	2.4516E-04	-9.9493E-06	1.7050E-05	1.5528E-04
14	1.1961E-03	-2.3199E-03	2.8993E-04	-9.9493E-06	1.7050E-05	1.5528E-04
15	1.8949E-03	-2.3199E-03	3.3471E-04	-9.9493E-06	1.7050E-05	1.5528E-04
16	2.5936E-03	-2.3199E-03	3.7948E-04	-9.9493E-06	1.7050E-05	1.5528E-04
17	4.2062E-04	-2.3647E-03	2.4516E-04	-9.9493E-06	1.7050E-05	1.5528E-04
18	1.1194E-03	-2.3647E-03	2.8993E-04	-9.9493E-06	1.7050E-05	1.5528E-04
19	1.8181E-03	-2.3647E-03	3.3471E-04	-9.9493E-06	1.7050E-05	1.5528E-04
20	2.5169E-03	-2.3647E-03	3.7948E-04	-9.9493E-06	1.7050E-05	1.5528E-04
MINIMUM	4.2062E-04	-2.3647E-03	2.4516E-04	-9.9493E-06	1.7050E-05	1.5528E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	2.8238E-03	-2.1856E-03	3.7948E-04	-9.9493E-06	1.7050E-05	1.5528E-04
Pile N.	4	1	4	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	1197.9	-418.16	47.193	-3.5078	-125.81	-1109.1
2	2343.0	-400.15	55.776	-3.5078	-155.84	-1073.9
3	3345.7	-414.33	68.666	-3.5078	-194.47	-1102.6
4	4118.0	-530.17	100.96	-3.5078	-271.13	-1327.6
5	1072.2	-385.68	42.407	-3.5078	-116.11	-1055.7
6	2217.3	-368.55	50.141	-3.5078	-144.18	-1021.1
7	3260.9	-383.83	62.159	-3.5078	-181.13	-1053.1
8	4033.2	-520.07	96.693	-3.5078	-263.38	-1325.0
9	946.44	-393.80	42.203	-3.5078	-115.61	-1083.8
10	2091.5	-376.34	49.901	-3.5078	-143.57	-1048.4
11	3176.1	-391.97	61.875	-3.5078	-180.42	-1081.2
12	3948.4	-532.14	96.497	-3.5078	-262.90	-1361.6
13	820.71	-403.22	42.146	-3.5078	-115.41	-1114.4
14	1965.8	-385.36	49.829	-3.5078	-143.32	-1078.2
15	3091.3	-401.35	61.790	-3.5078	-180.13	-1111.9
16	3863.6	-544.34	96.332	-3.5078	-262.49	-1398.4
17	694.98	-454.80	46.420	-3.5078	-123.93	-1230.1
18	1840.1	-434.86	54.809	-3.5078	-153.46	-1190.9
19	2985.1	-450.62	67.555	-3.5078	-191.76	-1223.1
20	3778.8	-579.44	100.01	-3.5078	-268.96	-1475.8
MINIMUM	694.98	-579.44	42.146	-3.5078	-271.13	-1475.8
Pile N.	17	20	13	1	4	20
MAXIMUM	4118.0	-368.55	100.96	-3.5078	-115.41	-1021.1
Pile N.	4	6	4	1	13	6

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

PILE GROUP	STRESS, KN/ M**2
*****	*****
1	4046.6
2	4601.0
3	5272.4
4	6419.8
5	3812.2
6	4367.0
7	5070.4
8	6359.6
9	3825.0
10	4377.1
11	5105.6
12	6419.8
13	3845.8
14	4395.0

APPALTATORE:		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>				
Consorzio 	Soci  					
PROGETTAZIONE: Mandataria 	Mandanti  					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B	COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 292 di 354

15	5148.8
16	6480.4
17	4124.6
18	4665.2
19	5425.8
20	6665.7

MINIMUM	3812.2
Pile N.	5
MAXIMUM	6665.7
Pile N.	20

\* 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	-2.1856E-03	-5.3253E-06	-557.63	-125.81	-418.18	-15.357	-145.72	-4.3860	677.88	7.8279E+06	7.8279E+06
x( M)	0.0000	0.0000	0.0000	0.0000	0.0000	8.8200	5.0400	11.160	18.000	0.0000	0.0000
2	-2.1856E-03	-6.6455E-06	-542.07	-155.84	-400.18	-17.622	-137.46	-5.0449	1325.9	7.8279E+06	7.8279E+06
x( M)	0.0000	11.160	6.4800	0.0000	0.0000	9.0000	5.0400	11.520	18.000	0.0000	0.0000
3	-2.1856E-03	-7.5583E-06	-554.64	-194.47	-414.37	-21.348	-143.91	-6.1510	1893.3	7.8279E+06	7.8279E+06
x( M)	0.0000	10.980	6.3000	0.0000	0.0000	8.8200	5.0400	11.340	18.000	0.0000	0.0000
4	-2.1856E-03	-7.7882E-06	-659.56	-271.13	-530.23	-31.688	-203.95	-9.2975	2330.3	7.8279E+06	7.8279E+06
x( M)	0.0000	10.080	5.9400	0.0000	0.0000	8.2800	5.0400	10.440	18.000	0.0000	0.0000
5	-2.2304E-03	-5.8024E-06	-529.83	-116.11	-385.69	-13.692	-128.65	-3.8652	606.73	7.8279E+06	7.8279E+06
x( M)	0.0000	11.340	6.4800	0.0000	0.0000	9.0000	5.0400	11.700	18.000	0.0000	0.0000
6	-2.2304E-03	-7.2633E-06	-514.34	-144.18	-368.58	-15.673	-121.05	-4.4434	1254.7	7.8279E+06	7.8279E+06
x( M)	0.0000	11.520	6.6000	0.0000	0.0000	9.1800	5.0400	11.880	18.000	0.0000	0.0000
7	-2.2304E-03	-8.2253E-06	-528.62	-181.13	-383.87	-19.118	-127.83	-5.4666	1845.3	7.8279E+06	7.8279E+06
x( M)	0.0000	11.520	6.4800	0.0000	0.0000	9.1800	5.0400	11.880	18.000	0.0000	0.0000
8	-2.2304E-03	-7.9297E-06	-657.98	-263.38	-520.14	-30.405	-197.00	-8.8896	2282.3	7.8279E+06	7.8279E+06
x( M)	0.0000	10.260	6.1200	0.0000	0.0000	8.2800	5.0400	10.440	18.000	0.0000	0.0000
9	-2.2751E-03	-5.8214E-06	-538.09	-115.61	-393.81	-13.581	-130.09	-3.8242	535.58	7.8279E+06	7.8279E+06
x( M)	0.0000	11.340	6.4800	0.0000	0.0000	9.0000	5.0400	11.700	18.000	0.0000	0.0000
10	-2.2751E-03	-7.2845E-06	-522.54	-143.57	-376.36	-15.545	-122.42	-4.3944	1183.6	7.8279E+06	7.8279E+06
x( M)	0.0000	11.520	6.6000	0.0000	0.0000	9.1800	5.0400	11.880	18.000	0.0000	0.0000
11	-2.2751E-03	-8.2573E-06	-536.95	-180.42	-392.01	-18.978	-129.30	-5.4116	1797.3	7.8279E+06	7.8279E+06
x( M)	0.0000	11.520	6.4800	0.0000	0.0000	9.1800	5.0400	11.880	18.000	0.0000	0.0000
12	-2.2751E-03	-7.9107E-06	-670.37	-262.90	-532.20	-30.314	-199.87	-8.8740	2234.3	7.8279E+06	7.8279E+06
x( M)	0.0000	10.260	6.1200	0.0000	0.0000	8.4600	5.0400	10.620	18.000	0.0000	0.0000
13	-2.3199E-03	-5.8244E-06	-547.56	-115.41	-403.23	-13.523	-132.10	-3.7989	464.43	7.8279E+06	7.8279E+06
x( M)	0.0000	11.340	6.4800	0.0000	0.0000	9.0000	5.0400	11.700	18.000	0.0000	0.0000
14	-2.3199E-03	-7.2865E-06	-531.84	-143.32	-385.38	-15.476	-124.32	-4.3642	1112.4	7.8279E+06	7.8279E+06
x( M)	0.0000	11.700	6.6000	0.0000	0.0000	9.1800	5.0400	12.060	18.000	0.0000	0.0000
15	-2.3199E-03	-8.2651E-06	-546.48	-180.13	-401.39	-18.906	-131.31	-5.3772	1749.3	7.8279E+06	7.8279E+06
x( M)	0.0000	11.520	6.6000	0.0000	0.0000	9.1800	5.0400	11.880	18.000	0.0000	0.0000
16	-2.3199E-03	-7.8909E-06	-682.82	-262.49	-544.40	-30.245	-202.77	-8.8618	2186.3	7.8279E+06	7.8279E+06
x( M)	0.0000	10.260	6.1200	0.0000	0.0000	8.4600	5.0400	10.620	18.000	0.0000	0.0000
17	-2.3647E-03	-5.3846E-06	-594.62	-123.93	-454.81	-14.938	-152.69	-4.2144	393.28	7.8279E+06	7.8279E+06
x( M)	0.0000	10.980	6.4800	0.0000	0.0000	8.8200	5.0400	11.340	18.000	0.0000	0.0000
18	-2.3647E-03	-6.7277E-06	-577.63	-153.46	-434.89	-17.130	-143.88	-4.8485	1041.3	7.8279E+06	7.8279E+06
x( M)	0.0000	11.160	6.4800	0.0000	0.0000	9.0000	5.0400	11.520	18.000	0.0000	0.0000
19	-2.3647E-03	-7.6548E-06	-591.66	-191.76	-450.66	-20.782	-150.85	-5.9221	1689.2	7.8279E+06	7.8279E+06
x( M)	0.0000	11.160	6.4800	0.0000	0.0000	9.0000	5.0400	11.520	18.000	0.0000	0.0000
20	-2.3647E-03	-7.7079E-06	-709.86	-268.96	-579.51	-31.271	-215.58	-9.2101	2138.4	7.8279E+06	7.8279E+06
x( M)	0.0000	10.080	6.1200	0.0000	0.0000	8.2800	5.0400	10.440	18.000	0.0000	0.0000
Min.	-2.3647E-03	-8.2651E-06	-709.86	-271.13	-579.51	-31.688	-215.58	-9.2975	393.28	7.8279E+06	7.8279E+06
Pile N.	17	15	20	4	20	4	20	4	17	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	4.7354E-05	2.4516E-04	1109.1	62.644	136.62	47.194	38.989	16.422	4046.6	7.8279E+06	7.8279E+06
x( M)	10.980	0.0000	0.0000	6.3000	8.8200	0.0000	11.160	5.0400	0.0000	0.0000	0.0000
2	4.9025E-05	2.8993E-04	1073.9	72.887	130.65	55.781	37.119	18.939	4601.0	7.8279E+06	7.8279E+06
x( M)	11.160	0.0000	0.0000	6.4800	8.8200	0.0000	11.340	5.0400	0.0000	0.0000	0.0000
3	4.7735E-05	3.3471E-04	1102.6	86.898	135.67	68.673	38.624	23.431	5272.4	7.8279E+06	7.8279E+06
x( M)	10.980	0.0000	0.0000	6.4800	8.8200	0.0000	11.160	5.0400	0.0000	0.0000	0.0000
4	4.3297E-05	3.7948E-04	1327.6	118.26	175.87	100.97	51.363	38.240	6419.8	7.8279E+06	7.8279E+06
x( M)	10.080	0.0000	0.0000	6.1200	8.1000	0.0000	10.260	5.0400	0.0000	0.0000	0.0000
5	5.2781E-05	2.4516E-04	1055.7	58.243	124.55	42.409	35.158	14.144	3812.2	7.8279E+06	7.8279E+06
x( M)	11.340	0.0000	0.0000	6.4800	9.0000	0.0000	11.700	5.0400	0.0000	0.0000	0.0000
6	5.4784E-05	2.8993E-04	1021.1	67.648	118.83	50.145	33.400	16.277	4367.0	7.8279E+06	7.8279E+06
x( M)	11.520	0.0000	0.0000	6.6000	9.1800	0.0000	11.880	5.0400	0.0000	0.0000	0.0000
7	5.3016E-05	3.3471E-04	1053.1	80.985	124.24	62.166	35.019	20.316	5070.4	7.8279E+06	7.8279E+06
x( M)	11.340	0.0000	0.0000	6.6000	9.0000	0.0000	11.700	5.0400	0.0000	0.0000	0.0000
8	4.5089E-05	3.7948E-04	1325.0	115.24	172.94	96.706	50.195	36.047	6359.6	7.8279E+06	7.8279E+06
x( M)	10.080	0.0000	0.0000	6.1200	8.2800	0.0000	10.440	5.0400	0.0000	0.0000	0.0000
9	5.4147E-05	2.4516E-04	1083.8	57.911	126.24	42.205	35.586	13.961	3825.0	7.8279E+06	7.8279E+06
x( M)	11.340	0.0000	0.0000	6.4800	9.0000	0.0000	11.700	5.0400	0.0000	0.0000	0.0000

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>							

10	5.6197E-05	2.8993E-04	1048.4	67.264	120.47	49.905	33.799	16.067	4377.1	7.8279E+06	7.8279E+06
x( M)	11.520	0.0000	0.0000	6.6600	9.1800	0.0000	11.880	5.0400	0.0000	0.0000	0.0000
11	5.4381E-05	3.3471E-04	1081.2	80.541	125.96	61.881	35.455	20.060	5105.6	7.8279E+06	7.8279E+06
x( M)	11.340	0.0000	0.0000	6.6600	9.0000	0.0000	11.700	5.0400	0.0000	0.0000	0.0000
12	4.5936E-05	3.7948E-04	1361.6	114.90	176.20	96.509	51.207	35.703	6419.6	7.8279E+06	7.8279E+06
x( M)	10.080	0.0000	0.0000	6.1200	8.2800	0.0000	10.440	5.0400	0.0000	0.0000	0.0000
13	5.5369E-05	2.4516E-04	1114.4	57.721	128.38	42.147	36.146	13.845	3845.8	7.8279E+06	7.8279E+06
x( M)	11.340	0.0000	0.0000	6.4800	9.0000	0.0000	11.700	5.0400	0.0000	0.0000	0.0000
14	5.7456E-05	2.8993E-04	1078.2	67.040	122.52	49.833	34.321	15.936	4395.0	7.8279E+06	7.8279E+06
x( M)	11.520	0.0000	0.0000	6.6600	9.1800	0.0000	11.880	5.0400	0.0000	0.0000	0.0000
15	5.5608E-05	3.3471E-04	1111.9	80.283	128.11	61.797	36.016	19.897	5148.8	7.8279E+06	7.8279E+06
x( M)	11.340	0.0000	0.0000	6.6600	9.0000	0.0000	11.700	5.0400	0.0000	0.0000	0.0000
16	4.6774E-05	3.7948E-04	1398.4	114.59	179.50	96.344	52.232	35.382	6480.4	7.8279E+06	7.8279E+06
x( M)	10.080	0.0000	0.0000	6.3000	8.2800	0.0000	10.440	5.0400	0.0000	0.0000	0.0000
17	5.2269E-05	2.4516E-04	1230.1	61.378	144.81	46.421	40.969	15.640	4124.6	7.8279E+06	7.8279E+06
x( M)	10.980	0.0000	0.0000	6.4800	8.2000	0.0000	11.340	5.0400	0.0000	0.0000	0.0000
18	5.4234E-05	2.8993E-04	1190.9	71.329	138.40	54.812	38.992	18.018	4665.2	7.8279E+06	7.8279E+06
x( M)	11.160	0.0000	0.0000	6.4800	9.0000	0.0000	11.520	5.0400	0.0000	0.0000	0.0000
19	5.2672E-05	3.3471E-04	1223.1	85.117	143.79	67.561	40.614	22.326	5425.8	7.8279E+06	7.8279E+06
x( M)	11.160	0.0000	0.0000	6.4800	8.2000	0.0000	11.340	5.0400	0.0000	0.0000	0.0000
20	4.6738E-05	3.7948E-04	1475.8	116.79	189.34	100.02	55.407	36.758	6665.7	7.8279E+06	7.8279E+06
x( M)	10.080	0.0000	0.0000	6.1200	8.2800	0.0000	10.440	5.0400	0.0000	0.0000	0.0000
Max. Pile N.	5.7456E-05	3.7948E-04	1475.8	118.26	189.34	100.97	55.407	38.240	6665.7	7.8279E+06	7.8279E+06
	14	4	20	4	20	4	20	4	20	1	1

LOAD CASE : 12  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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	0.5866	1.0000
2	0.5463	1.0000
3	0.5807	1.0000
4	0.8661	1.0000
5	0.4961	1.0000
6	0.4617	1.0000
7	0.4951	1.0000
8	0.8041	1.0000
9	0.4948	1.0000
10	0.4606	1.0000
11	0.4939	1.0000
12	0.8040	1.0000
13	0.4958	1.0000
14	0.4615	1.0000
15	0.4949	1.0000
16	0.8040	1.0000
17	0.5845	1.0000
18	0.5442	1.0000
19	0.5786	1.0000
20	0.8647	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
62121.4	-9696.71	820.871
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-2230.59	8219.10	91781.0

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
2.05261E-03	-2.55494E-03	1.96266E-04
ANGLE ROT. X, RAD	ANGLE ROT. Y, RAD	ANGLE ROT. Z, RAD
-5.91165E-06	9.48748E-06	1.76159E-04

THE GLOBAL STRUCTURAL COORDINATE SYSTEM

\* PILE TOP DISPLACEMENTS \*

<b>APPALTATORE:</b>	<b>Soci</b>
HirpiniaAV	salini impregio
ASTALDI	
<b>PROGETTAZIONE:</b>	<b>Mandanti</b>
ROKSOJL	NETENGINEERING
Alpina	

**ITINERARIO NAPOLI – BARI**  
**RADDOPPIO TRATTA APICE – ORSARA**  
**I LOTTO FUNZIONALE APICE – HIRPINIA**

<b>PROGETTO ESECUTIVO</b>	<b>COMMESSA</b>	<b>LOTTO</b>	<b>CODIFICA</b>	<b>DOCUMENTO</b>	<b>REV.</b>	<b>FOGLIO</b>
<b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	<b>IF28</b>	<b>01</b>	<b>E ZZ CL</b>	<b>VI0403 001</b>	<b>B</b>	<b>294 di 354</b>

PILE GROUP	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
*****	*****	*****	*****	*****	*****	*****
1	9.4892E-04	-2.5017E-03	1.5636E-04	-5.9117E-06	9.4875E-06	1.7616E-04
2	1.7416E-03	-2.5017E-03	1.8296E-04	-5.9117E-06	9.4875E-06	1.7616E-04
3	2.5343E-03	-2.5017E-03	2.0957E-04	-5.9117E-06	9.4875E-06	1.7616E-04
4	3.3271E-03	-2.5017E-03	2.3617E-04	-5.9117E-06	9.4875E-06	1.7616E-04
5	9.0623E-04	-2.5283E-03	1.5636E-04	-5.9117E-06	9.4875E-06	1.7616E-04
6	1.6989E-03	-2.5283E-03	1.8296E-04	-5.9117E-06	9.4875E-06	1.7616E-04
7	2.4917E-03	-2.5283E-03	2.0957E-04	-5.9117E-06	9.4875E-06	1.7616E-04
8	3.2844E-03	-2.5283E-03	2.3617E-04	-5.9117E-06	9.4875E-06	1.7616E-04
9	8.6354E-04	-2.5549E-03	1.5636E-04	-5.9117E-06	9.4875E-06	1.7616E-04
10	1.6562E-03	-2.5549E-03	1.8296E-04	-5.9117E-06	9.4875E-06	1.7616E-04
11	2.4490E-03	-2.5549E-03	2.0957E-04	-5.9117E-06	9.4875E-06	1.7616E-04
12	3.2417E-03	-2.5549E-03	2.3617E-04	-5.9117E-06	9.4875E-06	1.7616E-04
13	8.2084E-04	-2.5816E-03	1.5636E-04	-5.9117E-06	9.4875E-06	1.7616E-04
14	1.6136E-03	-2.5816E-03	1.8296E-04	-5.9117E-06	9.4875E-06	1.7616E-04
15	2.4063E-03	-2.5816E-03	2.0957E-04	-5.9117E-06	9.4875E-06	1.7616E-04
16	3.1990E-03	-2.5816E-03	2.3617E-04	-5.9117E-06	9.4875E-06	1.7616E-04
17	7.7815E-04	-2.6082E-03	1.5636E-04	-5.9117E-06	9.4875E-06	1.7616E-04
18	1.5709E-03	-2.6082E-03	1.8296E-04	-5.9117E-06	9.4875E-06	1.7616E-04
19	2.3636E-03	-2.6082E-03	2.0957E-04	-5.9117E-06	9.4875E-06	1.7616E-04
20	3.1563E-03	-2.6082E-03	2.3617E-04	-5.9117E-06	9.4875E-06	1.7616E-04
MINIMUM	7.7815E-04	-2.6082E-03	1.5636E-04	-5.9117E-06	9.4875E-06	1.7616E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	3.3271E-03	-2.5017E-03	2.3617E-04	-5.9117E-06	9.4875E-06	1.7616E-04
Pile N.	4	1	4	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	1560.7	-470.76	30.592	-2.0843	-84.110	-1253.5
2	2859.8	-450.38	35.480	-2.0843	-101.46	-1213.7
3	3798.1	-467.07	43.155	-2.0843	-124.42	-1247.7
4	4674.3	-602.23	63.222	-2.0843	-171.91	-1512.3
5	1490.8	-430.24	27.624	-2.0843	-78.067	-1178.8
6	2789.8	-411.35	32.062	-2.0843	-94.363	-1140.6
7	3750.9	-428.95	39.244	-2.0843	-116.38	-1177.7
8	4627.1	-584.91	60.702	-2.0843	-167.35	-1490.7
9	1420.8	-434.77	27.540	-2.0843	-77.865	-1194.8
10	2719.9	-415.70	31.966	-2.0843	-94.126	-1156.2
11	3703.7	-433.49	39.129	-2.0843	-116.10	-1193.7
12	4579.9	-592.03	60.637	-2.0843	-167.19	-1512.3
13	1350.8	-440.53	27.534	-2.0843	-77.824	-1213.3
14	2649.9	-421.23	31.958	-2.0843	-94.077	-1174.3
15	3656.5	-439.24	39.120	-2.0843	-116.04	-1212.2
16	4532.7	-589.44	59.595	-2.0843	-164.20	-1505.8
17	1280.9	-492.73	30.359	-2.0843	-83.522	-1325.6
18	2579.9	-471.30	35.197	-2.0843	-100.74	-1283.6
19	3609.3	-488.85	42.828	-2.0843	-123.59	-1319.5
20	4485.5	-631.50	62.926	-2.0843	-171.23	-1600.2
MINIMUM	1280.9	-631.50	27.534	-2.0843	-171.91	-1600.2
Pile N.	17	20	13	1	4	20
MAXIMUM	4674.3	-411.35	63.222	-2.0843	-77.824	-1140.6
Pile N.	4	6	4	1	13	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	9.4892E-04	-2.5017E-03	1.5636E-04	-5.9117E-06	9.4875E-06	1.7616E-04
2	1.7416E-03	-2.5017E-03	1.8296E-04	-5.9117E-06	9.4875E-06	1.7616E-04
3	2.5343E-03	-2.5017E-03	2.0957E-04	-5.9117E-06	9.4875E-06	1.7616E-04
4	3.3271E-03	-2.5017E-03	2.3617E-04	-5.9117E-06	9.4875E-06	1.7616E-04
5	9.0623E-04	-2.5283E-03	1.5636E-04	-5.9117E-06	9.4875E-06	1.7616E-04
6	1.6989E-03	-2.5283E-03	1.8296E-04	-5.9117E-06	9.4875E-06	1.7616E-04
7	2.4917E-03	-2.5283E-03	2.0957E-04	-5.9117E-06	9.4875E-06	1.7616E-04
8	3.2844E-03	-2.5283E-03	2.3617E-04	-5.9117E-06	9.4875E-06	1.7616E-04
9	8.6354E-04	-2.5549E-03	1.5636E-04	-5.9117E-06	9.4875E-06	1.7616E-04
10	1.6562E-03	-2.5549E-03	1.8296E-04	-5.9117E-06	9.4875E-06	1.7616E-04
11	2.4490E-03	-2.5549E-03	2.0957E-04	-5.9117E-06	9.4875E-06	1.7616E-04
12	3.2417E-03	-2.5549E-03	2.3617E-04	-5.9117E-06	9.4875E-06	1.7616E-04
13	8.2084E-04	-2.5816E-03	1.5636E-04	-5.9117E-06	9.4875E-06	1.7616E-04
14	1.6136E-03	-2.5816E-03	1.8296E-04	-5.9117E-06	9.4875E-06	1.7616E-04
15	2.4063E-03	-2.5816E-03	2.0957E-04	-5.9117E-06	9.4875E-06	1.7616E-04
16	3.1990E-03	-2.5816E-03	2.3617E-04	-5.9117E-06	9.4875E-06	1.7616E-04
17	7.7815E-04	-2.6082E-03	1.5636E-04	-5.9117E-06	9.4875E-06	1.7616E-04
18	1.5709E-03	-2.6082E-03	1.8296E-04	-5.9117E-06	9.4875E-06	1.7616E-04
19	2.3636E-03	-2.6082E-03	2.0957E-04	-5.9117E-06	9.4875E-06	1.7616E-04
20	3.1563E-03	-2.6082E-03	2.3617E-04	-5.9117E-06	9.4875E-06	1.7616E-04
MINIMUM	7.7815E-04	-2.6082E-03	1.5636E-04	-5.9117E-06	9.4875E-06	1.7616E-04

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   		
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>		

Pile N.	17	17	1	1	1	1
MAXIMUM	3.3271E-03	-2.5017E-03	2.3617E-04	-5.9117E-06	9.4875E-06	1.7616E-04
Pile N.	4	1	4	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	1560.7	-470.76	30.592	-2.0843	-84.110	-1253.5
2	2859.8	-450.38	35.480	-2.0843	-101.46	-1213.7
3	3798.1	-467.07	43.155	-2.0843	-124.42	-1247.7
4	4674.3	-602.23	63.222	-2.0843	-171.91	-1512.3
5	1490.8	-430.24	27.624	-2.0843	-78.067	-1178.8
6	2789.8	-411.35	32.062	-2.0843	-94.363	-1140.6
7	3750.9	-428.95	39.244	-2.0843	-116.38	-1177.7
8	4627.1	-584.91	60.702	-2.0843	-167.35	-1490.7
9	1420.8	-434.77	27.540	-2.0843	-77.865	-1194.8
10	2719.9	-415.70	31.966	-2.0843	-94.126	-1156.2
11	3703.7	-433.49	39.129	-2.0843	-116.10	-1193.7
12	4579.9	-592.03	60.637	-2.0843	-167.19	-1512.3
13	1350.8	-440.53	27.534	-2.0843	-77.824	-1213.3
14	2649.9	-421.23	31.958	-2.0843	-94.077	-1174.3
15	3656.5	-439.24	39.120	-2.0843	-116.04	-1212.2
16	4532.7	-589.44	59.595	-2.0843	-164.20	-1505.8
17	1280.9	-492.73	30.359	-2.0843	-83.522	-1325.6
18	2579.9	-471.30	35.197	-2.0843	-100.74	-1283.6
19	3609.3	-488.85	42.828	-2.0843	-123.59	-1319.5
20	4485.5	-631.50	62.926	-2.0843	-171.23	-1600.2
MINIMUM	1280.9	-631.50	27.534	-2.0843	-171.91	-1600.2
Pile N.	17	20	13	1	4	20
MAXIMUM	4674.3	-411.35	63.222	-2.0843	-77.824	-1140.6
Pile N.	4	6	4	1	13	6

PILE GROUP	STRESS, KN/ M**2
1	4674.8
2	5294.0
3	5933.5
4	7238.7
5	4409.0
6	5033.0
7	5694.2
8	7145.5
9	4417.5
10	5040.2
11	5715.6
12	7183.6
13	4433.7
14	5054.9
15	5744.5
16	7136.5
17	4733.5
18	5345.9
19	6042.2
20	7395.3
MINIMUM	4409.0
Pile N.	5
MAXIMUM	7395.3
Pile N.	20







\* 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	-2.5017E-03	-3.5035E-06	-623.24	-84.110	-470.78	-9.5933	-156.93	-2.7075	883.20	7.8279E+06	7.8279E+06
x(M)	0.0000	11.160	6.4800	0.0000	0.0000	8.8200	5.0400	11.340	18.000	0.0000	0.0000
2	-2.5017E-03	-4.3207E-06	-606.16	-101.46	-450.42	-10.877	-148.16	-3.0790	1618.3	7.8279E+06	7.8279E+06
x(M)	0.0000	11.340	6.4800	0.0000	0.0000	9.0000	5.0400	11.700	18.000	0.0000	0.0000
3	-2.5017E-03	-4.8617E-06	-620.94	-124.42	-467.13	-13.085	-155.49	-3.7234	2149.3	7.8279E+06	7.8279E+06
x(M)	0.0000	11.160	6.4800	0.0000	0.0000	9.0000	5.0400	11.520	18.000	0.0000	0.0000
4	-2.5017E-03	-4.8073E-06	-745.48	-171.91	-602.32	-19.586	-222.50	-5.7854	2645.1	7.8279E+06	7.8279E+06
x(M)	0.0000	10.000	6.1200	0.0000	0.0000	8.2800	5.0400	10.440	18.000	0.0000	0.0000
5	-2.5283E-03	-3.8134E-06	-587.94	-78.067	-430.26	-8.5917	-138.12	-2.4059	843.60	7.8279E+06	7.8279E+06
x(M)	0.0000	11.520	6.6600	0.0000	0.0000	9.1800	5.0400	11.880	18.000	0.0000	0.0000
6	-2.5283E-03	-4.7044E-06	-571.53	-94.363	-411.39	-9.7022	-130.20	-2.7285	1578.7	7.8279E+06	7.8279E+06
x(M)	0.0000	11.700	6.6600	0.0000	0.0000	9.3600	5.0400	12.060	18.000	0.0000	0.0000
7	-2.5283E-03	-5.2760E-06	-587.66	-116.38	-429.01	-11.765	-137.75	-3.3310	2122.6	7.8279E+06	7.8279E+06
x(M)	0.0000	11.520	6.6600	0.0000	0.0000	9.1800	5.0400	12.060	18.000	0.0000	0.0000
8	-2.5283E-03	-4.9078E-06	-737.33	-167.35	-584.98	-18.879	-213.70	-5.5536	2618.4	7.8279E+06	7.8279E+06
x(M)	0.0000	10.260	6.1200	0.0000	0.0000	8.4600	5.0400	10.620	18.000	0.0000	0.0000
9	-2.5549E-03	-3.8219E-06	-592.70	-77.865	-434.79	-8.5506	-138.85	-2.3909	804.01	7.8279E+06	7.8279E+06
x(M)	0.0000	11.520	6.6600	0.0000	0.0000	9.1800	5.0400	11.880	18.000	0.0000	0.0000





<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>				
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>					
<b>COMMESSA</b> <b>IF28</b>	<b>LOTTO</b> <b>01</b>	<b>CODIFICA</b> <b>E ZZ CL</b>	<b>DOCUMENTO</b> <b>VI0403 001</b>	<b>REV.</b> <b>B</b>	<b>FOGLIO</b> <b>297 di 354</b>

2	0.5791	1.0000
3	0.5445	1.0000
4	0.5846	1.0000
5	0.8053	1.0000
6	0.4951	1.0000
7	0.4615	1.0000
8	0.4955	1.0000
9	0.8053	1.0000
10	0.4940	1.0000
11	0.4606	1.0000
12	0.4945	1.0000
13	0.8053	1.0000
14	0.4951	1.0000
15	0.4615	1.0000
16	0.4955	1.0000
17	0.8660	1.0000
18	0.5791	1.0000
19	0.5445	1.0000
20	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
41435.8	13169.1	98.3994
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-358.579	1244.66	-19231.9

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
1.26078E-03	3.04631E-03	2.53758E-05
ANGLE ROT. X, RAD	ANGLE ROT. Y, RAD	ANGLE ROT. Z, RAD
-1.34953E-06	1.15257E-06	-7.13303E-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	1.7526E-03	3.0585E-03	1.6266E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
2	1.4317E-03	3.0585E-03	2.2339E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
3	1.1107E-03	3.0585E-03	2.8412E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
4	7.8967E-04	3.0585E-03	3.4485E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
5	1.7474E-03	3.0524E-03	1.6266E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
6	1.4265E-03	3.0524E-03	2.2339E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
7	1.1055E-03	3.0524E-03	2.8412E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
8	7.8449E-04	3.0524E-03	3.4485E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
9	1.7423E-03	3.0463E-03	1.6266E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
10	1.4213E-03	3.0463E-03	2.2339E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
11	1.1003E-03	3.0463E-03	2.8412E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
12	7.7930E-04	3.0463E-03	3.4485E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
13	1.7371E-03	3.0402E-03	1.6266E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
14	1.4161E-03	3.0402E-03	2.2339E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
15	1.0951E-03	3.0402E-03	2.8412E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
16	7.7411E-04	3.0402E-03	3.4485E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
17	1.7319E-03	3.0342E-03	1.6266E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
18	1.4109E-03	3.0342E-03	2.2339E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
19	1.0899E-03	3.0342E-03	2.8412E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
20	7.6893E-04	3.0342E-03	3.4485E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
MINIMUM	7.6893E-04	3.0342E-03	1.6266E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
Pile N.	20	17	1	1	1	1
MAXIMUM	1.7526E-03	3.0585E-03	3.4485E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
Pile N.	1	1	4	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	2877.8	826.77	3.7350	-0.4758	-9.3413	2335.3
2	2351.8	654.17	4.3114	-0.4758	-12.240	1995.9
3	1825.8	631.22	5.5099	-0.4758	-16.303	1948.1
4	1299.8	658.15	7.1626	-0.4758	-21.296	2003.3
5	2869.3	791.01	3.5711	-0.4758	-9.0375	2265.6
6	2343.3	595.80	3.9206	-0.4758	-11.436	1872.7

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>		<b>COMMESSA</b> <b>IF28</b>	<b>LOTTO</b> <b>01</b>	<b>CODIFICA</b> <b>E ZZ CL</b>	<b>DOCUMENTO</b> <b>VI0403 001</b>	<b>REV.</b> <b>B</b>	<b>FOGLIO</b> <b>298 di 354</b>

7	1817.3	572.00	4.9922	-0.4758	-15.218	1821.4
8	1291.3	596.48	6.4969	-0.4758	-19.916	1873.3
9	2860.8	789.51	3.5720	-0.4758	-9.0396	2261.0
10	2334.8	593.95	3.9167	-0.4758	-11.428	1867.3
11	1808.8	570.23	4.9873	-0.4758	-15.208	1816.2
12	1282.8	594.62	6.4906	-0.4758	-19.903	1867.9
13	2852.3	788.02	3.5729	-0.4758	-9.0417	2256.4
14	2326.3	593.57	3.9229	-0.4758	-11.442	1865.1
15	1800.3	569.87	4.9952	-0.4758	-15.225	1814.0
16	1274.3	594.25	6.5007	-0.4758	-19.926	1865.7
17	2843.8	820.50	3.7387	-0.4758	-9.3497	2316.3
18	2317.8	649.25	4.3162	-0.4758	-12.251	1979.7
19	1791.8	626.48	5.5161	-0.4758	-16.318	1932.3
20	1265.8	653.21	7.1704	-0.4758	-21.315	1987.1
MINIMUM	1265.8	569.87	3.5711	-0.4758	-21.315	1814.0
Pile N.	20	15	5	1	20	15
MAXIMUM	2877.8	826.77	7.1704	-0.4758	-9.0375	2335.3
Pile N.	1	1	20	1	5	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	1.7526E-03	3.0585E-03	1.6266E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
2	1.4317E-03	3.0585E-03	2.2339E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
3	1.1107E-03	3.0585E-03	2.8412E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
4	7.8967E-04	3.0585E-03	3.4485E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
5	1.7474E-03	3.0524E-03	1.6266E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
6	1.4265E-03	3.0524E-03	2.2339E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
7	1.1055E-03	3.0524E-03	2.8412E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
8	7.8449E-04	3.0524E-03	3.4485E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
9	1.7423E-03	3.0463E-03	1.6266E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
10	1.4213E-03	3.0463E-03	2.2339E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
11	1.1003E-03	3.0463E-03	2.8412E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
12	7.7930E-04	3.0463E-03	3.4485E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
13	1.7371E-03	3.0402E-03	1.6266E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
14	1.4161E-03	3.0402E-03	2.2339E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
15	1.0951E-03	3.0402E-03	2.8412E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
16	7.7411E-04	3.0402E-03	3.4485E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
17	1.7319E-03	3.0342E-03	1.6266E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
18	1.4109E-03	3.0342E-03	2.2339E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
19	1.0899E-03	3.0342E-03	2.8412E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
20	7.6893E-04	3.0342E-03	3.4485E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
MINIMUM	7.6893E-04	3.0342E-03	1.6266E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
Pile N.	20	17	1	1	1	1
MAXIMUM	1.7526E-03	3.0585E-03	3.4485E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
Pile N.	1	1	4	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	2877.8	826.77	3.7350	-0.4758	-9.3413	2335.3
2	2351.8	654.17	4.3114	-0.4758	-12.240	1995.9
3	1825.8	631.22	5.5099	-0.4758	-16.303	1948.1
4	1299.8	658.15	7.1626	-0.4758	-21.296	2003.3
5	2869.3	791.01	3.5711	-0.4758	-9.0375	2265.6
6	2343.3	595.80	3.9206	-0.4758	-11.436	1872.7
7	1817.3	572.00	4.9922	-0.4758	-15.218	1821.4
8	1291.3	596.48	6.4969	-0.4758	-19.916	1873.3
9	2860.8	789.51	3.5720	-0.4758	-9.0396	2261.0
10	2334.8	593.95	3.9167	-0.4758	-11.428	1867.3
11	1808.8	570.23	4.9873	-0.4758	-15.208	1816.2
12	1282.8	594.62	6.4906	-0.4758	-19.903	1867.9
13	2852.3	788.02	3.5729	-0.4758	-9.0417	2256.4
14	2326.3	593.57	3.9229	-0.4758	-11.442	1865.1
15	1800.3	569.87	4.9952	-0.4758	-15.225	1814.0
16	1274.3	594.25	6.5007	-0.4758	-19.926	1865.7
17	2843.8	820.50	3.7387	-0.4758	-9.3497	2316.3
18	2317.8	649.25	4.3162	-0.4758	-12.251	1979.7
19	1791.8	626.48	5.5161	-0.4758	-16.318	1932.3
20	1265.8	653.21	7.1704	-0.4758	-21.315	1987.1
MINIMUM	1265.8	569.87	3.5711	-0.4758	-21.315	1814.0
Pile N.	20	15	5	1	20	15
MAXIMUM	2877.8	826.77	7.1704	-0.4758	-9.0375	2335.3
Pile N.	1	1	20	1	5	1

PILE GROUP	STRESS, KN/ M**2
*****	*****
1	8676.5
2	7354.8



APPALTATORE: Consorzio <b>HirpiniaAV</b> Soci <b>salini impregilo</b> <b>ASTALDI</b>		<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>				
PROGETTAZIONE: Mandataria <b>ROKSOJL</b> Mandanti <b>NETENGINEERING</b> <b>Alpina</b>						
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B						
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	
IF28	01	E ZZ CL	VI0403 001	B	300 di 354	

4	3.0585E-03	3.4485E-05	753.28	8.3870	658.18	7.1629	190.92	2.0926	6782.0	7.8279E+06	7.8279E+06
x( M)	0.0000	0.0000	6.8400	6.8400	0.0000	0.0000	5.0400	5.0400	0.0000	0.0000	0.0000
5	3.0524E-03	1.6266E-05	855.85	4.3224	791.09	3.5714	245.11	1.1374	8461.5	7.8279E+06	7.8279E+06
x( M)	0.0000	0.0000	6.4800	6.3000	0.0000	0.0000	5.0400	5.0400	0.0000	0.0000	0.0000
6	3.0524E-03	2.2339E-05	702.62	4.9768	595.85	3.9209	166.83	1.1246	6977.9	7.8279E+06	7.8279E+06
x( M)	0.0000	0.0000	7.0200	6.8400	0.0000	0.0000	5.0400	5.0400	0.0000	0.0000	0.0000
7	3.0524E-03	2.8412E-05	682.17	6.2224	572.04	4.9925	157.57	1.3959	6525.7	7.8279E+06	7.8279E+06
x( M)	0.0000	0.0000	7.0200	7.0200	0.0000	0.0000	5.0400	5.0400	0.0000	0.0000	0.0000
8	3.0524E-03	3.4485E-05	702.65	7.8393	596.50	6.4972	166.96	1.8332	6384.8	7.8279E+06	7.8279E+06
x( M)	0.0000	0.0000	7.0200	0.0000	0.0000	0.0000	5.0400	5.0400	0.0000	0.0000	0.0000
9	3.0463E-03	1.6266E-05	854.41	4.3239	789.59	3.5723	244.81	1.1385	8442.8	7.8279E+06	7.8279E+06
x( M)	0.0000	0.0000	6.4800	6.3000	0.0000	0.0000	5.0400	5.0400	0.0000	0.0000	0.0000
10	3.0463E-03	2.2339E-05	700.83	4.9743	594.00	3.9170	166.34	1.1237	6956.9	7.8279E+06	7.8279E+06
x( M)	0.0000	0.0000	7.0200	6.8400	0.0000	0.0000	5.0400	5.0400	0.0000	0.0000	0.0000
11	3.0463E-03	2.8412E-05	680.43	6.2193	570.27	4.9877	157.11	1.3948	6505.1	7.8279E+06	7.8279E+06
x( M)	0.0000	0.0000	7.0200	7.0200	0.0000	0.0000	5.0400	5.0400	0.0000	0.0000	0.0000
12	3.0463E-03	3.4485E-05	700.87	7.8355	594.65	6.4909	166.47	1.8317	6363.8	7.8279E+06	7.8279E+06
x( M)	0.0000	0.0000	7.0200	7.0200	0.0000	0.0000	5.0400	5.0400	0.0000	0.0000	0.0000
13	3.0402E-03	1.6266E-05	852.96	4.3254	788.09	3.5732	244.51	1.1395	8424.1	7.8279E+06	7.8279E+06
x( M)	0.0000	0.0000	6.4800	6.3000	0.0000	0.0000	5.0400	5.0400	0.0000	0.0000	0.0000
14	3.0402E-03	2.2339E-05	700.27	4.9806	593.62	3.9232	166.42	1.1267	6945.4	7.8279E+06	7.8279E+06
x( M)	0.0000	0.0000	7.0200	6.8400	0.0000	0.0000	5.0400	5.0400	0.0000	0.0000	0.0000
15	3.0402E-03	2.8412E-05	679.91	6.2270	569.91	4.9955	157.19	1.3985	6493.7	7.8279E+06	7.8279E+06
x( M)	0.0000	0.0000	7.0200	7.0200	0.0000	0.0000	5.0400	5.0400	0.0000	0.0000	0.0000
16	3.0402E-03	3.4485E-05	700.30	7.8451	594.27	6.5010	166.55	1.8366	6352.2	7.8279E+06	7.8279E+06
x( M)	0.0000	0.0000	7.0200	7.0200	0.0000	0.0000	5.0400	5.0400	0.0000	0.0000	0.0000
17	3.0342E-03	1.6266E-05	875.57	4.4544	820.58	3.7390	258.21	1.2066	8600.0	7.8279E+06	7.8279E+06
x( M)	0.0000	0.0000	6.3000	6.1200	0.0000	0.0000	5.0400	5.0400	0.0000	0.0000	0.0000
18	3.0342E-03	2.2339E-05	745.61	5.3147	649.30	4.3165	188.55	1.2802	7286.7	7.8279E+06	7.8279E+06
x( M)	0.0000	0.0000	6.8400	6.6600	0.0000	0.0000	5.0400	5.0400	0.0000	0.0000	0.0000
19	3.0342E-03	2.8412E-05	726.76	6.6692	626.52	5.5164	179.48	1.6010	6845.9	7.8279E+06	7.8279E+06
x( M)	0.0000	0.0000	6.8400	6.8400	0.0000	0.0000	5.0400	5.0400	0.0000	0.0000	0.0000
20	3.0342E-03	3.4485E-05	748.21	8.3992	653.23	7.1707	189.99	2.1001	6713.7	7.8279E+06	7.8279E+06
x( M)	0.0000	0.0000	6.8400	6.6600	0.0000	0.0000	5.0400	5.0400	0.0000	0.0000	0.0000
Max.	3.0585E-03	3.4485E-05	881.46	8.3992	826.84	7.1707	259.49	2.1001	8676.5	7.8279E+06	7.8279E+06
Pile N.	1	4	1	20	1	20	1	20	1	1	1

LOAD CASE : 14  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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	0.5445	1.0000
3	0.5791	1.0000
4	0.8661	1.0000
5	0.4955	1.0000
6	0.4615	1.0000
7	0.4951	1.0000
8	0.8053	1.0000
9	0.4945	1.0000
10	0.4606	1.0000
11	0.4941	1.0000
12	0.8053	1.0000
13	0.4955	1.0000
14	0.4615	1.0000
15	0.4951	1.0000
16	0.8053	1.0000
17	0.5845	1.0000
18	0.5445	1.0000
19	0.5791	1.0000
20	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
41383.0	-36126.8	98.3994
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-297.079	1244.66	1.91967E+05

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>		<b>COMMESSA</b> <b>IF28</b>	<b>LOTTO</b> <b>01</b>	<b>CODIFICA</b> <b>E ZZ CL</b>	<b>DOCUMENTO</b> <b>VI0403 001</b>	<b>REV.</b> <b>B</b>	<b>FOGLIO</b> <b>301 di 354</b>

VERTICAL , M 1.78356E-03	HORIZONTAL Y, M -0.0131501	HORIZONTAL Z, M 3.60072E-05
ANGLE ROT. X,RAD -1.41527E-06	ANGLE ROT. Y,RAD 1.66033E-06	ANGLE ROT. Z,RAD 5.15023E-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	-1.6779E-03	-0.013137	2.6454E-05	-1.4153E-06	1.6603E-06	5.1502E-04
2	6.3970E-04	-0.013137	3.2823E-05	-1.4153E-06	1.6603E-06	5.1502E-04
3	2.9573E-03	-0.013137	3.9192E-05	-1.4153E-06	1.6603E-06	5.1502E-04
4	5.2749E-03	-0.013137	4.5560E-05	-1.4153E-06	1.6603E-06	5.1502E-04
5	-1.6854E-03	-0.013144	2.6454E-05	-1.4153E-06	1.6603E-06	5.1502E-04
6	6.3223E-04	-0.013144	3.2823E-05	-1.4153E-06	1.6603E-06	5.1502E-04
7	2.9498E-03	-0.013144	3.9192E-05	-1.4153E-06	1.6603E-06	5.1502E-04
8	5.2674E-03	-0.013144	4.5560E-05	-1.4153E-06	1.6603E-06	5.1502E-04
9	-1.6928E-03	-0.013150	2.6454E-05	-1.4153E-06	1.6603E-06	5.1502E-04
10	6.2476E-04	-0.013150	3.2823E-05	-1.4153E-06	1.6603E-06	5.1502E-04
11	2.9424E-03	-0.013150	3.9192E-05	-1.4153E-06	1.6603E-06	5.1502E-04
12	5.2600E-03	-0.013150	4.5560E-05	-1.4153E-06	1.6603E-06	5.1502E-04
13	-1.7003E-03	-0.013156	2.6454E-05	-1.4153E-06	1.6603E-06	5.1502E-04
14	6.1729E-04	-0.013156	3.2823E-05	-1.4153E-06	1.6603E-06	5.1502E-04
15	2.9349E-03	-0.013156	3.9192E-05	-1.4153E-06	1.6603E-06	5.1502E-04
16	5.2525E-03	-0.013156	4.5560E-05	-1.4153E-06	1.6603E-06	5.1502E-04
17	-1.7078E-03	-0.013163	2.6454E-05	-1.4153E-06	1.6603E-06	5.1502E-04
18	6.0981E-04	-0.013163	3.2823E-05	-1.4153E-06	1.6603E-06	5.1502E-04
19	2.9274E-03	-0.013163	3.9192E-05	-1.4153E-06	1.6603E-06	5.1502E-04
20	5.2450E-03	-0.013163	4.5560E-05	-1.4153E-06	1.6603E-06	5.1502E-04
MINIMUM	-1.7078E-03	-0.013163	2.6454E-05	-1.4153E-06	1.6603E-06	5.1502E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	5.2749E-03	-0.013137	4.5560E-05	-1.4153E-06	1.6603E-06	5.1502E-04
Pile N.	4	1	4	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	-2521.5	-1799.7	3.2676	-0.4990	-9.7314	-5838.2
2	1054.0	-1713.2	4.0730	-0.4990	-12.914	-5646.9
3	4265.6	-1779.7	5.2386	-0.4990	-16.947	-5815.1
4	5547.6	-2315.0	8.1128	-0.4990	-24.790	-7020.9
5	-2532.7	-1615.6	2.9186	-0.4990	-8.9130	-5401.2
6	1041.8	-1537.5	3.6455	-0.4990	-11.887	-5223.0
7	4257.3	-1606.0	4.7223	-0.4990	-15.717	-5401.9
8	5544.8	-2208.0	7.7350	-0.4990	-23.969	-6790.2
9	-2543.9	-1613.9	2.9137	-0.4990	-8.9012	-5398.3
10	1029.5	-1535.9	3.6395	-0.4990	-11.872	-5220.1
11	4249.1	-1604.3	4.7146	-0.4990	-15.698	-5399.0
12	5542.0	-2208.7	7.7332	-0.4990	-23.966	-6793.3
13	-2555.1	-1616.7	2.9172	-0.4990	-8.9096	-5406.2
14	1017.3	-1538.5	3.6438	-0.4990	-11.883	-5227.8
15	4240.8	-1607.1	4.7201	-0.4990	-15.712	-5407.0
16	5539.1	-2209.4	7.7314	-0.4990	-23.962	-6796.4
17	-2566.4	-1802.1	3.2645	-0.4990	-9.7243	-5849.0
18	1005.0	-1715.5	4.0692	-0.4990	-12.905	-5657.4
19	4232.5	-1782.1	5.2338	-0.4990	-16.936	-5825.8
20	5536.3	-2317.9	8.1052	-0.4990	-24.775	-7033.5
MINIMUM	-2566.4	-2317.9	2.9137	-0.4990	-24.790	-7033.5
Pile N.	17	20	9	1	4	20
MAXIMUM	5547.6	-1535.9	8.1128	-0.4990	-8.9012	-5220.1
Pile N.	4	10	4	1	9	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	-1.6779E-03	-0.013137	2.6454E-05	-1.4153E-06	1.6603E-06	5.1502E-04
2	6.3970E-04	-0.013137	3.2823E-05	-1.4153E-06	1.6603E-06	5.1502E-04
3	2.9573E-03	-0.013137	3.9192E-05	-1.4153E-06	1.6603E-06	5.1502E-04
4	5.2749E-03	-0.013137	4.5560E-05	-1.4153E-06	1.6603E-06	5.1502E-04
5	-1.6854E-03	-0.013144	2.6454E-05	-1.4153E-06	1.6603E-06	5.1502E-04
6	6.3223E-04	-0.013144	3.2823E-05	-1.4153E-06	1.6603E-06	5.1502E-04
7	2.9498E-03	-0.013144	3.9192E-05	-1.4153E-06	1.6603E-06	5.1502E-04
8	5.2674E-03	-0.013144	4.5560E-05	-1.4153E-06	1.6603E-06	5.1502E-04
9	-1.6928E-03	-0.013150	2.6454E-05	-1.4153E-06	1.6603E-06	5.1502E-04
10	6.2476E-04	-0.013150	3.2823E-05	-1.4153E-06	1.6603E-06	5.1502E-04

APPALTATORE:

Consorzio

Soci



ITINERARIO NAPOLI – BARI

PROGETTAZIONE:

Mandatario

Mandanti



RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

PROGETTO ESECUTIVO

RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 302 di 354
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11	2.9424E-03	-0.013150	3.9192E-05	-1.4153E-06	1.6603E-06	5.1502E-04
12	5.2600E-03	-0.013150	4.5560E-05	-1.4153E-06	1.6603E-06	5.1502E-04
13	-1.7003E-03	-0.013156	2.6454E-05	-1.4153E-06	1.6603E-06	5.1502E-04
14	6.1729E-04	-0.013156	3.2823E-05	-1.4153E-06	1.6603E-06	5.1502E-04
15	2.9349E-04	-0.013156	3.9192E-05	-1.4153E-06	1.6603E-06	5.1502E-04
16	5.2525E-03	-0.013156	4.5560E-05	-1.4153E-06	1.6603E-06	5.1502E-04
17	-1.7078E-03	-0.013163	2.6454E-05	-1.4153E-06	1.6603E-06	5.1502E-04
18	6.0981E-04	-0.013163	3.2823E-05	-1.4153E-06	1.6603E-06	5.1502E-04
19	2.9274E-03	-0.013163	3.9192E-05	-1.4153E-06	1.6603E-06	5.1502E-04
20	5.2450E-03	-0.013163	4.5560E-05	-1.4153E-06	1.6603E-06	5.1502E-04

MINIMUM	-1.7078E-03	-0.013163	2.6454E-05	-1.4153E-06	1.6603E-06	5.1502E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	5.2749E-03	-0.013137	4.5560E-05	-1.4153E-06	1.6603E-06	5.1502E-04
Pile N.	4	1	4	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	-2521.5	-1799.7	3.2676	-0.4990	-9.7314	-5838.2
2	1054.0	-1713.2	4.0730	-0.4990	-12.914	-5646.9
3	4265.6	-1779.7	5.2386	-0.4990	-16.947	-5815.1
4	5547.6	-2315.0	8.1128	-0.4990	-24.790	-7020.9
5	-2532.7	-1615.6	2.9186	-0.4990	-8.9130	-5401.2
6	1041.8	-1537.5	3.6455	-0.4990	-11.887	-5223.0
7	4257.3	-1606.0	4.7223	-0.4990	-15.717	-5401.9
8	5544.8	-2208.0	7.7350	-0.4990	-23.969	-6790.2
9	-2543.9	-1613.9	2.9137	-0.4990	-8.9012	-5398.3
10	1029.5	-1535.9	3.6395	-0.4990	-11.872	-5220.1
11	4249.1	-1604.3	4.7146	-0.4990	-15.698	-5399.0
12	5542.0	-2208.7	7.7332	-0.4990	-23.966	-6793.3
13	-2555.1	-1616.7	2.9172	-0.4990	-8.9096	-5406.2
14	1017.3	-1538.5	3.6438	-0.4990	-11.883	-5227.8
15	4240.8	-1607.1	4.7201	-0.4990	-15.712	-5407.0
16	5539.1	-2209.4	7.7314	-0.4990	-23.962	-6796.4
17	-2566.4	-1802.1	3.2645	-0.4990	-9.7243	-5849.0
18	1005.0	-1715.5	4.0692	-0.4990	-12.905	-5657.4
19	4232.5	-1782.1	5.2338	-0.4990	-16.936	-5825.8
20	5536.3	-2317.9	8.1052	-0.4990	-24.775	-7033.5
MINIMUM	-2566.4	-2317.9	2.9137	-0.4990	-24.790	-7033.5
Pile N.	17	20	9	1	4	20
MAXIMUM	5547.6	-1535.9	8.1128	-0.4990	-8.9012	-5220.1
Pile N.	4	10	4	1	9	10

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







1	1.9047E+04
2	1.7639E+04
3	1.9964E+04
4	2.4329E+04
5	1.7734E+04
6	1.6353E+04
7	1.8712E+04
8	2.3631E+04
9	1.7732E+04
10	1.6337E+04
11	1.8699E+04
12	2.3639E+04
13	1.7762E+04
14	1.6354E+04
15	1.8718E+04
16	2.3646E+04
17	1.9105E+04
18	1.7643E+04
19	1.9978E+04
20	2.4360E+04
MINIMUM	1.6337E+04
Pile N.	10
MAXIMUM	2.4360E+04
Pile N.	20

\* 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	-0.013137	-5.1611E-07	-2311.4	-9.7314	-1799.5	-0.8929	-423.59	-0.1841	1426.9	7.8279E+06	7.8279E+06
x( M)	0.0000	12.960	7.5600	0.0000	0.0000	10.620	5.0400	13.860	18.000	0.0000	0.0000
2	-0.013137	-6.5347E-07	-2242.2	-12.914	-1713.3	-1.0777	-398.52	-0.2258	596.44	7.8279E+06	7.8279E+06
x( M)	0.0000	13.140	7.7400	0.0000	0.0000	10.800	5.0400	14.040	18.000	0.0000	0.0000
3	-0.013137	-8.0231E-07	-2308.1	-16.947	-1780.0	-1.3683	-419.95	-0.2883	2413.8	7.8279E+06	7.8279E+06
x( M)	0.0000	12.960	7.5600	0.0000	0.0000	10.620	5.0400	13.860	18.000	0.0000	0.0000



<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	

LOAD CASE : 15  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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	0.5003	1.0000
3	0.5040	1.0000
4	0.6166	1.0000
5	0.5400	1.0000
6	0.4615	1.0000
7	0.4648	1.0000
8	0.5741	1.0000
9	0.5399	1.0000
10	0.4615	1.0000
11	0.4647	1.0000
12	0.5741	1.0000
13	0.5717	1.0000
14	0.4920	1.0000
15	0.4951	1.0000
16	0.6040	1.0000
17	0.8435	1.0000
18	0.7844	1.0000
19	0.7867	1.0000
20	0.8661	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN 41383.0	HOR. LOAD Y, KN -6407.28	HOR. LOAD Z, KN -22721.5
MOMENT X, KN- M 15159.1	MOMENT Y, KN- M -1.06812E+05	MOMENT Z, KN- M 59335.1

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*



VERTICAL, M 1.33213E-03	HORIZONTAL Y, M -1.98494E-03	HORIZONTAL Z, M -6.15165E-03
ANGLE ROT. X, RAD 6.74751E-05	ANGLE ROT. Y, RAD -1.48999E-04	ANGLE ROT. Z, RAD 1.06889E-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	-7.3036E-04	-2.5922E-03	-5.6962E-03	6.7475E-05	-1.4900E-04	1.0689E-04
2	-2.4936E-04	-2.5922E-03	-5.9998E-03	6.7475E-05	-1.4900E-04	1.0689E-04
3	2.3164E-04	-2.5922E-03	-6.3035E-03	6.7475E-05	-1.4900E-04	1.0689E-04
4	7.1264E-04	-2.5922E-03	-6.6071E-03	6.7475E-05	-1.4900E-04	1.0689E-04
5	-5.9869E-05	-2.2886E-03	-5.6962E-03	6.7475E-05	-1.4900E-04	1.0689E-04
6	4.2113E-04	-2.2886E-03	-5.9998E-03	6.7475E-05	-1.4900E-04	1.0689E-04
7	9.0213E-04	-2.2886E-03	-6.3035E-03	6.7475E-05	-1.4900E-04	1.0689E-04
8	1.3831E-03	-2.2886E-03	-6.6071E-03	6.7475E-05	-1.4900E-04	1.0689E-04
9	6.1063E-04	-1.9849E-03	-5.6962E-03	6.7475E-05	-1.4900E-04	1.0689E-04
10	1.0916E-03	-1.9849E-03	-5.9998E-03	6.7475E-05	-1.4900E-04	1.0689E-04
11	1.5726E-03	-1.9849E-03	-6.3035E-03	6.7475E-05	-1.4900E-04	1.0689E-04
12	2.0536E-03	-1.9849E-03	-6.6071E-03	6.7475E-05	-1.4900E-04	1.0689E-04
13	1.2811E-03	-1.6813E-03	-5.6962E-03	6.7475E-05	-1.4900E-04	1.0689E-04
14	1.7621E-03	-1.6813E-03	-5.9998E-03	6.7475E-05	-1.4900E-04	1.0689E-04
15	2.2431E-03	-1.6813E-03	-6.3035E-03	6.7475E-05	-1.4900E-04	1.0689E-04
16	2.7241E-03	-1.6813E-03	-6.6071E-03	6.7475E-05	-1.4900E-04	1.0689E-04
17	1.9516E-03	-1.3777E-03	-5.6962E-03	6.7475E-05	-1.4900E-04	1.0689E-04
18	2.4326E-03	-1.3777E-03	-5.9998E-03	6.7475E-05	-1.4900E-04	1.0689E-04
19	2.9136E-03	-1.3777E-03	-6.3035E-03	6.7475E-05	-1.4900E-04	1.0689E-04
20	3.3946E-03	-1.3777E-03	-6.6071E-03	6.7475E-05	-1.4900E-04	1.0689E-04
MINIMUM	-7.3036E-04	-2.5922E-03	-6.6071E-03	6.7475E-05	-1.4900E-04	1.0689E-04
MAXIMUM	3.3946E-03	-1.3777E-03	-5.6962E-03	6.7475E-05	-1.4900E-04	1.0689E-04



<b>APPALTATORE:</b> Consorzio <b>Soci</b>   		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>							COMMESSA <b>IF28</b>

Pile N. 20 17 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	-1098.7	-456.36	-1060.4	23.790	3297.3	-1363.3
2	-375.89	-407.85	-1005.5	23.790	3245.0	-1257.9
3	383.14	-404.46	-1052.5	23.790	3415.6	-1250.5
4	1173.5	-454.63	-1241.4	23.790	3898.4	-1359.8
5	-90.246	-376.56	-1013.6	23.790	3197.8	-1122.0
6	695.82	-335.71	-959.75	23.790	3144.1	-1032.1
7	1484.1	-332.70	-1004.1	23.790	3308.5	-1025.5
8	2272.3	-376.60	-1191.3	23.790	3791.7	-1122.2
9	1006.4	-318.53	-1017.2	23.790	3207.7	-927.28
10	1794.6	-283.54	-963.00	23.790	3153.4	-850.75
11	2582.8	-280.91	-1007.3	23.790	3317.6	-844.92
12	3266.8	-318.41	-1195.0	23.790	3801.6	-927.06
13	2105.1	-269.94	-1057.5	23.790	3296.8	-752.34
14	2893.4	-240.98	-1005.5	23.790	3250.7	-690.21
15	3476.2	-238.60	-1051.2	23.790	3418.1	-684.93
16	4007.8	-268.69	-1237.0	23.790	3894.1	-749.54
17	3154.0	-270.97	-1350.1	23.790	3901.0	-674.76
18	3685.7	-254.76	-1348.7	23.790	3978.9	-643.10
19	4217.3	-251.89	-1407.7	23.790	4177.3	-637.37
20	4748.9	-265.17	-1553.0	23.790	4549.6	-663.29
MINIMUM	-1098.7	-456.36	-1553.0	23.790	3144.1	-1363.3
Pile N.	1	1	20	1	6	1
MAXIMUM	4748.9	-238.60	-959.75	23.790	4549.6	-637.37
Pile N.	20	15	6	1	20	19







**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	-7.3036E-04	-2.5922E-03	-5.6962E-03	6.7475E-05	-1.4900E-04	1.0689E-04
2	-2.4936E-04	-2.5922E-03	-5.9998E-03	6.7475E-05	-1.4900E-04	1.0689E-04
3	2.3164E-04	-2.5922E-03	-6.3035E-03	6.7475E-05	-1.4900E-04	1.0689E-04
4	7.1264E-04	-2.5922E-03	-6.6071E-03	6.7475E-05	-1.4900E-04	1.0689E-04
5	-5.9869E-05	-2.2886E-03	-5.6962E-03	6.7475E-05	-1.4900E-04	1.0689E-04
6	4.2113E-04	-2.2886E-03	-5.9998E-03	6.7475E-05	-1.4900E-04	1.0689E-04
7	9.0213E-04	-2.2886E-03	-6.3035E-03	6.7475E-05	-1.4900E-04	1.0689E-04
8	1.3831E-03	-2.2886E-03	-6.6071E-03	6.7475E-05	-1.4900E-04	1.0689E-04
9	6.1063E-04	-1.9849E-03	-5.6962E-03	6.7475E-05	-1.4900E-04	1.0689E-04
10	1.0916E-03	-1.9849E-03	-5.9998E-03	6.7475E-05	-1.4900E-04	1.0689E-04
11	1.5726E-03	-1.9849E-03	-6.3035E-03	6.7475E-05	-1.4900E-04	1.0689E-04
12	2.0536E-03	-1.9849E-03	-6.6071E-03	6.7475E-05	-1.4900E-04	1.0689E-04
13	1.2811E-03	-1.6813E-03	-5.6962E-03	6.7475E-05	-1.4900E-04	1.0689E-04
14	1.7621E-03	-1.6813E-03	-5.9998E-03	6.7475E-05	-1.4900E-04	1.0689E-04
15	2.2431E-03	-1.6813E-03	-6.3035E-03	6.7475E-05	-1.4900E-04	1.0689E-04
16	2.7241E-03	-1.6813E-03	-6.6071E-03	6.7475E-05	-1.4900E-04	1.0689E-04
17	1.9516E-03	-1.3777E-03	-5.6962E-03	6.7475E-05	-1.4900E-04	1.0689E-04
18	2.4326E-03	-1.3777E-03	-5.9998E-03	6.7475E-05	-1.4900E-04	1.0689E-04
19	2.9136E-03	-1.3777E-03	-6.3035E-03	6.7475E-05	-1.4900E-04	1.0689E-04
20	3.3946E-03	-1.3777E-03	-6.6071E-03	6.7475E-05	-1.4900E-04	1.0689E-04
MINIMUM	-7.3036E-04	-2.5922E-03	-6.6071E-03	6.7475E-05	-1.4900E-04	1.0689E-04
Pile N.	1	1	4	1	1	1
MAXIMUM	3.3946E-03	-1.3777E-03	-5.6962E-03	6.7475E-05	-1.4900E-04	1.0689E-04
Pile N.	20	17	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	-1098.7	-456.36	-1060.4	23.790	3297.3	-1363.3
2	-375.89	-407.85	-1005.5	23.790	3245.0	-1257.9
3	383.14	-404.46	-1052.5	23.790	3415.6	-1250.5
4	1173.5	-454.63	-1241.4	23.790	3898.4	-1359.8
5	-90.246	-376.56	-1013.6	23.790	3197.8	-1122.0
6	695.82	-335.71	-959.75	23.790	3144.1	-1032.1
7	1484.1	-332.70	-1004.1	23.790	3308.5	-1025.5
8	2272.3	-376.60	-1191.3	23.790	3791.7	-1122.2
9	1006.4	-318.53	-1017.2	23.790	3207.7	-927.28
10	1794.6	-283.54	-963.00	23.790	3153.4	-850.75
11	2582.8	-280.91	-1007.3	23.790	3317.6	-844.92
12	3266.8	-318.41	-1195.0	23.790	3801.6	-927.06
13	2105.1	-269.94	-1057.5	23.790	3296.8	-752.34
14	2893.4	-240.98	-1005.5	23.790	3250.7	-690.21
15	3476.2	-238.60	-1051.2	23.790	3418.1	-684.93
16	4007.8	-268.69	-1237.0	23.790	3894.1	-749.54
17	3154.0	-270.97	-1350.1	23.790	3901.0	-674.76
18	3685.7	-254.76	-1348.7	23.790	3978.9	-643.10

<b>APPALTATORE:</b> <b>Consorzio</b> <b>Soci</b>   		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> <b>Mandatario</b> <b>Mandanti</b>   							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>		<b>COMMESSA</b> <b>IF28</b>	<b>LOTTO</b> <b>01</b>	<b>CODIFICA</b> <b>E ZZ CL</b>	<b>DOCUMENTO</b> <b>VI0403 001</b>	<b>REV.</b> <b>B</b>	<b>FOGLIO</b> <b>306 di 354</b>







19	4217.3	-251.89	-1407.7	23.790	4177.3	-637.37
20	4748.9	-265.17	-1553.0	23.790	4549.6	-663.29
<b>MINIMUM</b>	<b>-1098.7</b>	<b>-456.36</b>	<b>-1553.0</b>	<b>23.790</b>	<b>3144.1</b>	<b>-1363.3</b>
<b>Pile N.</b>	<b>1</b>	<b>1</b>	<b>20</b>	<b>1</b>	<b>6</b>	<b>1</b>
<b>MAXIMUM</b>	<b>4748.9</b>	<b>-238.60</b>	<b>-959.75</b>	<b>23.790</b>	<b>4549.6</b>	<b>-637.37</b>
<b>Pile N.</b>	<b>20</b>	<b>15</b>	<b>6</b>	<b>1</b>	<b>20</b>	<b>19</b>

PILE GROUP	STRESS, KN/ M**2
*****	*****
1	1.1390E+04
2	1.0716E+04
3	1.1194E+04
4	1.3125E+04
5	1.0279E+04
6	1.0381E+04
7	1.1294E+04
8	1.3220E+04
9	1.0647E+04
10	1.0873E+04
11	1.1794E+04
12	1.3658E+04
13	1.1397E+04
14	1.1667E+04
15	1.2488E+04
16	1.4236E+04
17	1.3733E+04
18	1.4250E+04
19	1.5140E+04
20	1.6563E+04
<b>MINIMUM</b>	<b>1.0279E+04</b>
<b>Pile N.</b>	<b>5</b>
<b>MAXIMUM</b>	<b>1.6563E+04</b>
<b>Pile N.</b>	<b>20</b>

\* 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	-2.5922E-03	-5.6962E-03	-534.90	-1194.8	-456.35	-1060.4	-112.12	-257.47	621.74	7.8279E+06	7.8279E+06
x(M)	0.0000	0.0000	7.0200	7.2000	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
2	-2.5922E-03	-5.9998E-03	-494.52	-1165.9	-407.84	-1005.5	-96.525	-234.51	212.71	7.8279E+06	7.8279E+06
x(M)	0.0000	0.0000	7.2000	7.3800	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
3	-2.5922E-03	-6.3035E-03	-491.60	-1219.0	-404.46	-1052.5	-95.261	-244.01	216.81	7.8279E+06	7.8279E+06
x(M)	0.0000	0.0000	7.3800	7.3800	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
4	-2.5922E-03	-6.6071E-03	-532.67	-1385.9	-454.65	-1241.4	-110.66	-297.85	664.08	7.8279E+06	7.8279E+06
x(M)	0.0000	0.0000	7.0200	7.2000	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
5	-2.2886E-03	-5.6962E-03	-455.39	-1158.8	-376.56	-1013.6	-91.921	-243.16	51.069	7.8279E+06	7.8279E+06
x(M)	0.0000	0.0000	7.0200	7.2000	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
6	-2.2886E-03	-5.9998E-03	-420.86	-1130.0	-335.71	-959.77	-78.883	-220.82	393.75	7.8279E+06	7.8279E+06
x(M)	0.0000	0.0000	7.3800	7.3800	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
7	-2.2886E-03	-6.3035E-03	-418.21	-1181.4	-332.72	-1004.2	-77.777	-229.55	839.80	7.8279E+06	7.8279E+06
x(M)	0.0000	0.0000	7.3800	7.5600	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
8	-2.2886E-03	-6.6071E-03	-454.68	-1347.2	-376.63	-1191.4	-91.131	-282.54	1285.9	7.8279E+06	7.8279E+06
x(M)	0.0000	0.0000	7.0200	7.3800	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
9	-1.9849E-03	-5.6962E-03	-393.92	-1163.4	-318.54	-1017.2	-78.558	-244.94	569.48	7.8279E+06	7.8279E+06
x(M)	0.0000	0.0000	7.0200	7.2000	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
10	-1.9849E-03	-5.9998E-03	-363.82	-1134.0	-283.56	-963.07	-67.346	-222.28	1015.5	7.8279E+06	7.8279E+06
x(M)	0.0000	0.0000	7.2000	7.5600	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
11	-1.9849E-03	-6.3035E-03	-361.34	-1185.2	-280.93	-1007.4	-66.356	-230.92	1461.6	7.8279E+06	7.8279E+06
x(M)	0.0000	0.0000	7.2000	7.5600	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
12	-1.9849E-03	-6.6071E-03	-393.01	-1351.4	-318.45	-1195.1	-77.741	-284.10	1848.6	7.8279E+06	7.8279E+06
x(M)	0.0000	0.0000	7.0200	7.2000	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
13	-1.6813E-03	-5.6962E-03	-340.39	-1197.1	-269.95	-1057.5	-68.115	-258.47	1191.3	7.8279E+06	7.8279E+06
x(M)	0.0000	0.0000	6.8400	7.2000	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
14	-1.6813E-03	-5.9998E-03	-315.34	-1170.0	-241.01	-1005.6	-58.722	-235.95	1637.3	7.8279E+06	7.8279E+06
x(M)	0.0000	0.0000	7.0200	7.3800	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
15	-1.6813E-03	-6.3035E-03	-312.99	-1221.7	-238.63	-1051.3	-57.786	-244.83	1967.1	7.8279E+06	7.8279E+06
x(M)	0.0000	0.0000	7.0200	7.3800	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
16	-1.6813E-03	-6.6071E-03	-338.36	-1385.9	-268.73	-1237.2	-66.927	-297.68	2268.0	7.8279E+06	7.8279E+06
x(M)	0.0000	0.0000	6.8400	7.2000	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
17	-1.3777E-03	-5.6962E-03	-327.29	-1422.5	-271.00	-1350.2	-73.750	-356.09	1784.8	7.8279E+06	7.8279E+06
x(M)	0.0000	0.0000	6.3000	6.3000	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
18	-1.3777E-03	-5.9998E-03	-313.88	-1438.2	-254.79	-1348.8	-68.003	-347.49	2085.7	7.8279E+06	7.8279E+06
x(M)	0.0000	0.0000	6.4800	6.4800	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
19	-1.3777E-03	-6.3035E-03	-311.23	-1499.9	-251.92	-1407.9	-66.733	-359.56	2386.5	7.8279E+06	7.8279E+06
x(M)	0.0000	0.0000	6.4800	6.4800	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
20	-1.3777E-03	-6.6071E-03	-321.32	-1624.9	-265.21	-1553.2	-70.692	-400.14	2687.3	7.8279E+06	7.8279E+06
x(M)	0.0000	0.0000	6.3000	6.6600	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
Min.	-2.5922E-03	-6.6071E-03	-534.90	-1624.9	-456.35	-1553.2	-112.12	-400.14	51.069	7.8279E+06	7.8279E+06
Pile N.	1	4	1	20	1	20	1	20	5	1	1

<b>APPALTATORE:</b> <u>Consorzio</u> <u>Soci</u>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>						
<b>PROGETTAZIONE:</b> <u>Mandatario</u> <u>Mandanti</u>   							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	<table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">COMMESSA <b>IF28</b></td> <td style="text-align: center;">LOTTO <b>01</b></td> <td style="text-align: center;">CODIFICA <b>E ZZ CL</b></td> <td style="text-align: center;">DOCUMENTO <b>VI0403 001</b></td> <td style="text-align: center;">REV. <b>B</b></td> <td style="text-align: center;">FOGLIO <b>307 di 354</b></td> </tr> </table>	COMMESSA <b>IF28</b>	LOTTO <b>01</b>	CODIFICA <b>E ZZ CL</b>	DOCUMENTO <b>VI0403 001</b>	REV. <b>B</b>	FOGLIO <b>307 di 354</b>
COMMESSA <b>IF28</b>	LOTTO <b>01</b>	CODIFICA <b>E ZZ CL</b>	DOCUMENTO <b>VI0403 001</b>	REV. <b>B</b>	FOGLIO <b>307 di 354</b>		

\* 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	6.1844E-05	1.4000E-04	1363.3	3297.3	115.99	261.06	27.344	61.900	1.1390E+04	7.8279E+06	7.8279E+06
x( M)	12.240	12.240	0.0000	0.0000	9.7200	9.9000	12.240	12.240	0.0000	0.0000	0.0000
2	6.3025E-05	1.5048E-04	1257.9	3245.0	102.11	242.39	22.569	53.582	1.0716E+04	7.8279E+06	7.8279E+06
x( M)	12.600	12.600	0.0000	0.0000	10.000	10.260	12.240	12.240	0.0000	0.0000	0.0000
3	6.2653E-05	1.5745E-04	1250.5	3415.6	101.16	253.20	22.097	55.186	1.1194E+04	7.8279E+06	7.8279E+06
x( M)	12.600	12.600	0.0000	0.0000	10.000	10.260	12.240	12.240	0.0000	0.0000	0.0000
4	6.0729E-05	1.6054E-04	1359.8	3898.4	115.52	303.28	26.652	70.457	1.3125E+04	7.8279E+06	7.8279E+06
x( M)	12.240	12.240	0.0000	0.0000	9.9000	9.9000	12.240	12.240	0.0000	0.0000	0.0000
5	5.4916E-05	1.4230E-04	1122.0	3197.8	96.752	247.86	22.358	57.785	1.0279E+04	7.8279E+06	7.8279E+06
x( M)	12.240	12.420	0.0000	0.0000	9.9000	10.080	12.240	12.240	0.0000	0.0000	0.0000
6	5.5628E-05	1.5198E-04	1032.1	3144.1	84.928	229.92	18.225	49.180	1.0381E+04	7.8279E+06	7.8279E+06
x( M)	12.780	12.780	0.0000	0.0000	10.260	10.260	12.240	12.240	0.0000	0.0000	0.0000
7	5.5240E-05	1.5879E-04	1025.5	3308.5	84.137	240.08	17.794	50.464	1.1294E+04	7.8279E+06	7.8279E+06
x( M)	12.780	12.780	0.0000	0.0000	10.260	10.440	12.240	12.240	0.0000	0.0000	0.0000
8	5.3811E-05	1.6280E-04	1122.2	3791.7	96.782	289.66	21.893	66.063	1.3220E+04	7.8279E+06	7.8279E+06
x( M)	12.240	12.420	0.0000	0.0000	9.9000	10.080	12.240	12.240	0.0000	0.0000	0.0000
9	4.7123E-05	1.4266E-04	927.28	3207.7	83.613	249.65	19.346	58.458	1.0647E+04	7.8279E+06	7.8279E+06
x( M)	12.240	12.420	0.0000	0.0000	9.9000	9.9000	12.240	12.240	0.0000	0.0000	0.0000
10	4.7803E-05	1.5259E-04	850.75	3153.4	73.302	231.46	15.844	49.813	1.0873E+04	7.8279E+06	7.8279E+06
x( M)	12.600	12.780	0.0000	0.0000	10.260	10.260	12.240	12.240	0.0000	0.0000	0.0000
11	4.7432E-05	1.5942E-04	844.92	3317.6	72.619	241.29	15.460	51.062	1.1794E+04	7.8279E+06	7.8279E+06
x( M)	12.600	12.780	0.0000	0.0000	10.260	10.440	12.240	12.240	0.0000	0.0000	0.0000
12	4.6152E-05	1.6314E-04	927.06	3801.6	83.513	291.00	18.896	66.661	1.3658E+04	7.8279E+06	7.8279E+06
x( M)	12.240	12.420	0.0000	0.0000	9.9000	10.080	12.240	12.240	0.0000	0.0000	0.0000
13	3.8833E-05	1.4151E-04	752.34	3296.8	73.330	261.97	17.135	62.580	1.1397E+04	7.8279E+06	7.8279E+06
x( M)	12.060	12.240	0.0000	0.0000	9.7200	9.9000	12.060	12.240	0.0000	0.0000	0.0000
14	3.9635E-05	1.5225E-04	690.21	3250.7	64.585	243.73	14.340	54.438	1.1667E+04	7.8279E+06	7.8279E+06
x( M)	12.420	12.600	0.0000	0.0000	10.080	10.260	12.240	12.240	0.0000	0.0000	0.0000
15	3.9363E-05	1.5919E-04	684.93	3418.1	63.914	254.05	13.996	55.827	1.2488E+04	7.8279E+06	7.8279E+06
x( M)	12.420	12.600	0.0000	0.0000	10.080	10.260	12.240	12.240	0.0000	0.0000	0.0000
16	3.8099E-05	1.6209E-04	749.54	3894.1	72.736	303.47	16.608	70.808	1.4236E+04	7.8279E+06	7.8279E+06
x( M)	12.060	12.240	0.0000	0.0000	9.7200	9.9000	12.060	12.240	0.0000	0.0000	0.0000
17	2.7733E-05	1.2626E-04	674.76	3901.0	78.162	347.28	19.531	89.029	1.3733E+04	7.8279E+06	7.8279E+06
x( M)	11.160	11.340	0.0000	0.0000	9.0000	9.1800	10.980	11.340	0.0000	0.0000	0.0000
18	2.8491E-05	1.3721E-04	643.10	3978.9	73.048	342.55	17.839	86.134	1.4250E+04	7.8279E+06	7.8279E+06
x( M)	11.340	11.520	0.0000	0.0000	9.1800	9.3600	11.340	11.700	0.0000	0.0000	0.0000
19	2.8519E-05	1.4459E-04	637.37	4177.3	72.034	355.40	17.436	88.652	1.5140E+04	7.8279E+06	7.8279E+06
x( M)	11.340	11.520	0.0000	0.0000	9.1800	9.3600	11.340	11.700	0.0000	0.0000	0.0000
20	2.7795E-05	1.4781E-04	663.29	4549.6	75.825	392.67	18.546	98.870	1.6563E+04	7.8279E+06	7.8279E+06
x( M)	11.160	11.340	0.0000	0.0000	9.0000	9.1800	11.160	11.520	0.0000	0.0000	0.0000
Max.	6.3025E-05	1.6314E-04	1363.3	4549.6	115.99	392.67	27.344	98.870	1.6563E+04	7.8279E+06	7.8279E+06
Pile N.	2	12	1	20	1	20	1	20	20	1	1



LOAD CASE : 16  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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	0.8439	1.0000
2	0.7847	1.0000
3	0.7870	1.0000
4	0.8661	1.0000
5	0.5718	1.0000
6	0.4921	1.0000
7	0.4951	1.0000
8	0.6037	1.0000
9	0.5400	1.0000
10	0.4615	1.0000
11	0.4647	1.0000
12	0.5737	1.0000
13	0.5401	1.0000
14	0.4615	1.0000
15	0.4648	1.0000
16	0.5737	1.0000
17	0.5845	1.0000
18	0.5003	1.0000
19	0.5039	1.0000
20	0.6161	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	

VERT. LOAD, KN    HOR. LOAD Y, KN    HOR. LOAD Z, KN  
 41383.0            -6407.28            22918.3  
  
 MOMENT X , KN- M    MOMENT Y, KN- M    MOMENT Z, KN- M  
 -15820.0            1.09301E+05            59335.8

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL , M            HORIZONTAL Y, M            HORIZONTAL Z, M  
 1.33429E-03            -1.99231E-03            6.22761E-03  
  
 ANGLE ROT. X,RAD    ANGLE ROT. Y,RAD    ANGLE ROT. Z,RAD  
 -7.03752E-05            1.51878E-04            1.07093E-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	1.9783E-03	-1.3589E-03	5.7526E-03	-7.0375E-05	1.5188E-04	1.0709E-04
2	2.4602E-03	-1.3589E-03	6.0693E-03	-7.0375E-05	1.5188E-04	1.0709E-04
3	2.9422E-03	-1.3589E-03	6.3860E-03	-7.0375E-05	1.5188E-04	1.0709E-04
4	3.4241E-03	-1.3589E-03	6.7027E-03	-7.0375E-05	1.5188E-04	1.0709E-04
5	1.2949E-03	-1.6756E-03	5.7526E-03	-7.0375E-05	1.5188E-04	1.0709E-04
6	1.7768E-03	-1.6756E-03	6.0693E-03	-7.0375E-05	1.5188E-04	1.0709E-04
7	2.2587E-03	-1.6756E-03	6.3860E-03	-7.0375E-05	1.5188E-04	1.0709E-04
8	2.7406E-03	-1.6756E-03	6.7027E-03	-7.0375E-05	1.5188E-04	1.0709E-04
9	6.1142E-04	-1.9923E-03	5.7526E-03	-7.0375E-05	1.5188E-04	1.0709E-04
10	1.0933E-03	-1.9923E-03	6.0693E-03	-7.0375E-05	1.5188E-04	1.0709E-04
11	1.5753E-03	-1.9923E-03	6.3860E-03	-7.0375E-05	1.5188E-04	1.0709E-04
12	2.0572E-03	-1.9923E-03	6.7027E-03	-7.0375E-05	1.5188E-04	1.0709E-04
13	-7.2036E-05	-2.3090E-03	5.7526E-03	-7.0375E-05	1.5188E-04	1.0709E-04
14	4.0988E-04	-2.3090E-03	6.0693E-03	-7.0375E-05	1.5188E-04	1.0709E-04
15	8.9180E-04	-2.3090E-03	6.3860E-03	-7.0375E-05	1.5188E-04	1.0709E-04
16	1.3737E-03	-2.3090E-03	6.7027E-03	-7.0375E-05	1.5188E-04	1.0709E-04
17	-7.5549E-04	-2.6257E-03	5.7526E-03	-7.0375E-05	1.5188E-04	1.0709E-04
18	-2.7357E-04	-2.6257E-03	6.0693E-03	-7.0375E-05	1.5188E-04	1.0709E-04
19	2.0835E-04	-2.6257E-03	6.3860E-03	-7.0375E-05	1.5188E-04	1.0709E-04
20	6.9027E-04	-2.6257E-03	6.7027E-03	-7.0375E-05	1.5188E-04	1.0709E-04
MINIMUM	-7.5549E-04	-2.6257E-03	5.7526E-03	-7.0375E-05	1.5188E-04	1.0709E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	3.4241E-03	-1.3589E-03	6.7027E-03	-7.0375E-05	1.5188E-04	1.0709E-04
Pile N.	4	1	4	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	3183.5	-265.54	1360.2	-24.812	-3929.9	-658.42
2	3716.2	-249.47	1360.5	-24.812	-4014.6	-627.04
3	4248.8	-246.50	1421.6	-24.812	-4220.6	-621.12
4	4781.5	-259.32	1569.5	-24.812	-4601.9	-646.16
5	2127.7	-268.11	1065.0	-24.812	-3320.0	-746.65
6	2917.4	-239.17	1013.8	-24.812	-3278.5	-684.51
7	3493.4	-236.65	1061.0	-24.812	-3452.0	-678.94
8	4026.1	-266.27	1249.4	-24.812	-3936.8	-742.60
9	1007.6	-319.15	1024.2	-24.812	-3229.8	-929.87
10	1797.4	-283.90	970.78	-24.812	-3179.8	-852.69
11	2587.1	-281.09	1016.5	-24.812	-3350.0	-846.46
12	3270.7	-318.32	1206.7	-24.812	-3842.8	-928.12
13	-108.59	-379.54	1020.4	-24.812	-3219.4	-1132.6
14	677.39	-338.15	967.36	-24.812	-3170.1	-1041.5
15	1467.1	-334.92	1013.2	-24.812	-3340.4	-1034.4
16	2256.9	-378.75	1202.8	-24.812	-3832.5	-1131.1
17	-1136.4	-461.87	1067.3	-24.812	-3319.1	-1382.4
18	-412.38	-412.52	1013.2	-24.812	-3271.3	-1275.1
19	344.63	-408.85	1061.7	-24.812	-3448.2	-1267.1
20	1136.9	-459.18	1253.2	-24.812	-3940.0	-1376.9
MINIMUM	-1136.4	-461.87	967.36	-24.812	-4601.9	-1382.4
Pile N.	17	17	14	1	4	17
MAXIMUM	4781.5	-236.65	1569.5	-24.812	-3170.1	-621.12
Pile N.	4	7	4	1	14	3

THE PILE COORDINATE SYSTEM (LOCAL AXES)

\* PILE TOP DISPLACEMENTS \*

<b>APPALTATORE:</b> Consorzio  Soci  		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria  Mandanti  							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>							COMMESSA <b>IF28</b>

PILE GROUP	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
*****	*****	*****	*****	*****	*****	*****
1	1.9783E-03	-1.3589E-03	5.7526E-03	-7.0375E-05	1.5188E-04	1.0709E-04
2	2.4602E-03	-1.3589E-03	6.0693E-03	-7.0375E-05	1.5188E-04	1.0709E-04
3	2.9422E-03	-1.3589E-03	6.3860E-03	-7.0375E-05	1.5188E-04	1.0709E-04
4	3.4241E-03	-1.3589E-03	6.7027E-03	-7.0375E-05	1.5188E-04	1.0709E-04
5	1.2949E-03	-1.6756E-03	5.7526E-03	-7.0375E-05	1.5188E-04	1.0709E-04
6	1.7768E-03	-1.6756E-03	6.0693E-03	-7.0375E-05	1.5188E-04	1.0709E-04
7	2.2587E-03	-1.6756E-03	6.3860E-03	-7.0375E-05	1.5188E-04	1.0709E-04
8	2.7406E-03	-1.6756E-03	6.7027E-03	-7.0375E-05	1.5188E-04	1.0709E-04
9	6.1142E-04	-1.9923E-03	5.7526E-03	-7.0375E-05	1.5188E-04	1.0709E-04
10	1.0933E-03	-1.9923E-03	6.0693E-03	-7.0375E-05	1.5188E-04	1.0709E-04
11	1.5753E-03	-1.9923E-03	6.3860E-03	-7.0375E-05	1.5188E-04	1.0709E-04
12	2.0572E-03	-1.9923E-03	6.7027E-03	-7.0375E-05	1.5188E-04	1.0709E-04
13	-7.2036E-05	-2.3090E-03	5.7526E-03	-7.0375E-05	1.5188E-04	1.0709E-04
14	4.0988E-04	-2.3090E-03	6.0693E-03	-7.0375E-05	1.5188E-04	1.0709E-04
15	8.9180E-04	-2.3090E-03	6.3860E-03	-7.0375E-05	1.5188E-04	1.0709E-04
16	1.3737E-03	-2.3090E-03	6.7027E-03	-7.0375E-05	1.5188E-04	1.0709E-04
17	-7.5549E-04	-2.6257E-03	5.7526E-03	-7.0375E-05	1.5188E-04	1.0709E-04
18	-2.7357E-04	-2.6257E-03	6.0693E-03	-7.0375E-05	1.5188E-04	1.0709E-04
19	2.0835E-04	-2.6257E-03	6.3860E-03	-7.0375E-05	1.5188E-04	1.0709E-04
20	6.9027E-04	-2.6257E-03	6.7027E-03	-7.0375E-05	1.5188E-04	1.0709E-04
MINIMUM	-7.5549E-04	-2.6257E-03	5.7526E-03	-7.0375E-05	1.5188E-04	1.0709E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	3.4241E-03	-1.3589E-03	6.7027E-03	-7.0375E-05	1.5188E-04	1.0709E-04
Pile N.	4	1	4	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	3183.5	-265.54	1360.2	-24.812	-3929.9	-658.42
2	3716.2	-249.47	1360.5	-24.812	-4014.6	-627.04
3	4248.8	-246.50	1421.6	-24.812	-4220.6	-621.12
4	4781.5	-259.32	1569.5	-24.812	-4601.9	-646.16
5	2127.7	-268.11	1065.0	-24.812	-3320.0	-746.65
6	2917.4	-239.17	1013.8	-24.812	-3278.5	-684.51
7	3493.4	-236.65	1061.0	-24.812	-3452.0	-678.94
8	4026.1	-266.27	1249.4	-24.812	-3936.8	-742.60
9	1007.6	-319.15	1024.2	-24.812	-3229.8	-929.87
10	1797.4	-283.90	970.78	-24.812	-3179.8	-852.69
11	2587.1	-281.09	1016.5	-24.812	-3350.0	-846.46
12	3270.7	-318.32	1206.7	-24.812	-3842.8	-928.12
13	-108.59	-379.54	1020.4	-24.812	-3219.4	-1132.6
14	677.39	-338.15	967.36	-24.812	-3170.1	-1041.5
15	1467.1	-334.92	1013.2	-24.812	-3340.4	-1034.4
16	2256.9	-378.75	1202.8	-24.812	-3832.5	-1131.1
17	-1136.4	-461.87	1067.3	-24.812	-3319.1	-1382.4
18	-412.38	-412.52	1013.2	-24.812	-3271.3	-1275.1
19	344.63	-408.85	1061.7	-24.812	-3448.2	-1267.1
20	1136.9	-459.18	1253.2	-24.812	-3940.0	-1376.9
MINIMUM	-1136.4	-461.87	967.36	-24.812	-4601.9	-1382.4
Pile N.	17	17	14	1	4	17
MAXIMUM	4781.5	-236.65	1569.5	-24.812	-3170.1	-621.12
Pile N.	4	7	4	1	14	3

PILE GROUP	STRESS, KN/ M**2
*****	*****
1	1.3827E+04
2	1.4366E+04
3	1.5279E+04
4	1.6731E+04
5	1.1474E+04
6	1.1759E+04
7	1.2595E+04
8	1.4369E+04
9	1.0714E+04
10	1.0953E+04
11	1.1892E+04
12	1.3782E+04
13	1.0361E+04
14	1.0454E+04
15	1.1384E+04
16	1.3337E+04
17	1.1494E+04
18	1.0830E+04
19	1.1282E+04
20	1.3240E+04
MINIMUM	1.0361E+04
Pile N.	13
MAXIMUM	1.6731E+04
Pile N.	4

\* EFFECTS FOR LATERALLY LOADED PILE \*

APPALTATORE:

Consorzio Soci

PROGETTAZIONE:

Mandatario Mandanti

# ITINERARIO NAPOLI – BARI

## RADDOPPIO TRATTA APICE – ORSARA I LOTTO FUNZIONALE APICE – HIRPINIA

**PROGETTO ESECUTIVO**  
**RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B**







COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO
IF28	01	E ZZ CL	VI0403 001	B	310 di 354

\* 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	-1.3589E-03	-1.2756E-04	-322.10	-3929.9	-265.57	-349.81	-72.236	-89.548	1801.5	7.8279E+06	7.8279E+06
x( M)	0.0000	11.340	6.3000	0.0000	0.0000	9.1800	5.0400	11.520	18.000	0.0000	0.0000
2	-1.3589E-03	-1.3882E-04	-308.77	-4014.6	-249.50	-345.43	-66.554	-86.698	2102.9	7.8279E+06	7.8279E+06
x( M)	0.0000	11.520	6.4800	0.0000	0.0000	9.3600	5.0400	11.700	18.000	0.0000	0.0000
3	-1.3589E-03	-1.4650E-04	-306.06	-4220.6	-246.53	-358.72	-65.264	-89.289	2404.3	7.8279E+06	7.8279E+06
x( M)	0.0000	11.520	6.4800	0.0000	0.0000	9.3600	5.0400	11.700	18.000	0.0000	0.0000
4	-1.3589E-03	-1.5006E-04	-315.86	-4601.9	-259.36	-396.55	-69.077	-99.641	2705.8	7.8279E+06	7.8279E+06
x( M)	0.0000	11.340	6.3000	0.0000	0.0000	9.1800	5.0400	11.520	18.000	0.0000	0.0000
5	-1.6756E-03	-1.4282E-04	-338.62	-3320.0	-268.13	-263.88	-67.583	-62.887	1204.0	7.8279E+06	7.8279E+06
x( M)	0.0000	12.240	6.8400	0.0000	0.0000	9.9000	5.0400	12.240	18.000	0.0000	0.0000
6	-1.6756E-03	-1.5380E-04	-313.57	-3278.5	-239.19	-245.80	-58.212	-54.688	1650.9	7.8279E+06	7.8279E+06
x( M)	0.0000	12.600	7.0200	0.0000	0.0000	10.260	5.0400	12.240	18.000	0.0000	0.0000
7	-1.6756E-03	-1.6101E-04	-311.11	-3452.0	-236.68	-256.46	-57.240	-56.100	1976.9	7.8279E+06	7.8279E+06
x( M)	0.0000	12.600	7.0200	0.0000	0.0000	10.260	5.0400	12.240	18.000	0.0000	0.0000
8	-1.6756E-03	-1.6426E-04	-336.12	-3936.8	-266.30	-306.35	-66.226	-71.207	2278.3	7.8279E+06	7.8279E+06
x( M)	0.0000	12.240	6.8400	0.0000	0.0000	9.9000	5.0400	12.240	18.000	0.0000	0.0000
9	-1.9923E-03	-1.4395E-04	-394.77	-3229.8	-319.16	-251.32	-78.591	-58.708	570.21	7.8279E+06	7.8279E+06
x( M)	0.0000	12.420	7.0200	0.0000	0.0000	9.9000	5.0400	12.240	18.000	0.0000	0.0000
10	-1.9923E-03	-1.5408E-04	-364.43	-3179.8	-283.92	-233.26	-67.317	-49.995	1017.1	7.8279E+06	7.8279E+06
x( M)	0.0000	12.780	7.2000	0.0000	0.0000	10.260	5.0400	12.240	18.000	0.0000	0.0000
11	-1.9923E-03	-1.6117E-04	-361.80	-3350.0	-281.11	-243.57	-66.278	-51.258	1464.0	7.8279E+06	7.8279E+06
x( M)	0.0000	12.780	7.2000	0.0000	0.0000	10.440	5.0400	12.240	18.000	0.0000	0.0000
12	-1.9923E-03	-1.6534E-04	-393.30	-3842.8	-318.35	-293.91	-77.565	-67.003	1850.8	7.8279E+06	7.8279E+06
x( M)	0.0000	12.420	7.0200	0.0000	0.0000	10.080	5.0400	12.240	18.000	0.0000	0.0000
13	-2.3090E-03	-1.4356E-04	-458.75	-3219.4	-379.54	-249.58	-92.480	-58.009	61.448	7.8279E+06	7.8279E+06
x( M)	0.0000	12.420	7.0200	0.0000	0.0000	10.080	5.0400	12.240	18.000	0.0000	0.0000
14	-2.3090E-03	-1.5344E-04	-423.85	-3170.1	-338.16	-231.78	-79.299	-49.340	383.32	7.8279E+06	7.8279E+06
x( M)	0.0000	12.780	7.3800	0.0000	0.0000	10.440	5.0400	12.240	18.000	0.0000	0.0000
15	-2.3090E-03	-1.6049E-04	-421.02	-3340.4	-334.93	-242.30	-78.132	-50.642	830.23	7.8279E+06	7.8279E+06
x( M)	0.0000	12.780	7.3800	0.0000	0.0000	10.440	5.0400	12.240	18.000	0.0000	0.0000
16	-2.3090E-03	-1.6498E-04	-457.39	-3832.5	-378.78	-292.53	-66.387	-66.387	1277.1	7.8279E+06	7.8279E+06
x( M)	0.0000	12.420	7.0200	0.0000	0.0000	10.080	5.0400	12.240	18.000	0.0000	0.0000
17	-2.6257E-03	-1.4127E-04	-540.96	-3319.1	-461.85	-262.78	-113.24	-62.129	643.09	7.8279E+06	7.8279E+06
x( M)	0.0000	12.240	7.0200	0.0000	0.0000	9.9000	5.0400	12.240	18.000	0.0000	0.0000
18	-2.6257E-03	-1.5197E-04	-499.95	-3271.3	-412.52	-244.29	-97.418	-53.758	233.36	7.8279E+06	7.8279E+06
x( M)	0.0000	12.600	7.3800	0.0000	0.0000	10.260	5.0400	12.240	18.000	0.0000	0.0000
19	-2.6257E-03	-1.5921E-04	-496.89	-3448.2	-408.86	-255.46	-96.079	-55.392	195.02	7.8279E+06	7.8279E+06
x( M)	0.0000	12.600	7.3800	0.0000	0.0000	10.260	5.0400	12.240	18.000	0.0000	0.0000
20	-2.6257E-03	-1.6267E-04	-538.01	-3940.0	-459.20	-306.01	-111.52	-70.801	643.34	7.8279E+06	7.8279E+06
x( M)	0.0000	12.240	7.0200	0.0000	0.0000	9.9000	5.0400	12.240	18.000	0.0000	0.0000
Min.	-2.6257E-03	-1.6534E-04	-540.96	-4601.9	-461.85	-396.55	-113.24	-99.641	61.448	7.8279E+06	7.8279E+06
Pile N.	17	12	17	4	17	4	17	4	13	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL.	DISPL.	MOMENT	MOMENT	SHEAR	SHEAR	SOIL REACT	SOIL REACT	TOTAL	FLEX. RIG.	FLEX. RIG.
	y-DIR	z-DIR	z-DIR	y-DIR	y-DIR	z-DIR	y-DIR	z-DIR	STRESS	z-DIR	y-DIR
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2	KN- M**2	KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	2.7315E-05	5.7526E-03	658.42	1434.2	76.807	1360.3	19.155	358.28	1.3827E+04	7.8279E+06	7.8279E+06
x( M)	11.160	0.0000	0.0000	6.6600	9.0000	0.0000	10.980	5.0400	0.0000	0.0000	0.0000
2	2.8054E-05	6.0693E-03	627.04	1452.0	71.737	1360.7	17.475	350.00	1.4366E+04	7.8279E+06	7.8279E+06
x( M)	11.340	0.0000	0.0000	6.8400	9.1800	0.0000	11.340	5.0400	0.0000	0.0000	0.0000
3	2.8081E-05	6.3860E-03	621.12	1516.1	70.701	1421.8	17.065	362.48	1.5279E+04	7.8279E+06	7.8279E+06
x( M)	11.340	0.0000	0.0000	6.8400	9.1800	0.0000	11.340	5.0400	0.0000	0.0000	0.0000
4	2.7381E-05	6.7026E-03	646.16	1643.8	74.365	1569.8	18.135	403.63	1.6731E+04	7.8279E+06	7.8279E+06
x( M)	11.160	0.0000	0.0000	6.6600	9.0000	0.0000	11.160	5.0400	0.0000	0.0000	0.0000
5	3.8671E-05	5.7526E-03	746.65	1206.8	72.876	1065.0	16.991	259.97	1.1474E+04	7.8279E+06	7.8279E+06
x( M)	12.060	0.0000	0.0000	7.2000	9.7200	0.0000	12.060	5.0400	0.0000	0.0000	0.0000
6	3.9437E-05	6.0693E-03	684.51	1181.0	64.151	1013.9	14.196	237.55	1.1759E+04	7.8279E+06	7.8279E+06
x( M)	12.420	0.0000	0.0000	7.3800	9.0000	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
7	3.9155E-05	6.3860E-03	678.94	1234.5	63.444	1061.1	13.840	246.70	1.2595E+04	7.8279E+06	7.8279E+06
x( M)	12.420	0.0000	0.0000	7.3800	9.0000	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
8	3.7918E-05	6.7026E-03	742.60	1401.7	72.104	1249.6	16.405	300.09	1.4369E+04	7.8279E+06	7.8279E+06
x( M)	12.060	0.0000	0.0000	7.2000	9.7200	0.0000	12.060	5.0400	0.0000	0.0000	0.0000
9	4.7285E-05	5.7526E-03	929.87	1172.6	83.721	1024.3	19.326	246.31	1.0714E+04	7.8279E+06	7.8279E+06
x( M)	12.240	0.0000	0.0000	7.2000	9.9000	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
10	4.7920E-05	6.0693E-03	852.69	1144.5	73.360	970.85	15.792	223.74	1.0953E+04	7.8279E+06	7.8279E+06
x( M)	12.600	0.0000	0.0000	7.5600	10.260	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
11	4.7543E-05	6.3860E-03	846.46	1197.7	72.631	1016.6	15.390	232.64	1.1892E+04	7.8279E+06	7.8279E+06
x( M)	12.780	0.0000	0.0000	7.5600	10.260	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
12	4.6291E-05	6.7026E-03	928.12	1366.5	83.447	1206.8	18.806	286.33	1.3782E+04	7.8279E+06	7.8279E+06
x( M)	12.240	0.0000	0.0000	7.3800	9.9000	0.0000	12.400	5.0400	0.0000	0.0000	0.0000
13	5.5404E-05	5.7526E-03	1132.6	1167.8	97.380	1020.4	22.451	244.46	1.0361E+04	7.8279E+06	7.8279E+06
x( M)	12.240	0.0000	0.0000	7.2000	9.9000	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
14	5.6084E-05	6.0693E-03	1041.5	1140.4	85.438	967.38	18.256	222.22	1.0454E+04	7.8279E+06	7.8279E+06
x( M)	12.780	0.0000	0.0000	7.5600	10.260	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
15	5.5668E-05	6.3860E-03	1034.4	1193.6	84.586	1013.2	17.802	231.23	1.1384E+04	7.8279E+06	7.8279E+06
x( M)	12.780	0.0000	0.0000	7.5600	10.260	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
16	5.4265E-05	6.7026E-03	1131.1	1362.4	97.206	1202.9	21.904	284.72	1.3337E+04	7.8279E+06	7.8279E+06
x( M)	12.240	0.0000	0.0000	7.3800	9.9000	0.0000	12.240	5.0400	0.0000	0.0000	0.0000

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>				
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>					
<b>COMMESSA</b> <b>IF28</b>	<b>LOTTO</b> <b>01</b>	<b>CODIFICA</b> <b>E ZZ CL</b>	<b>DOCUMENTO</b> <b>VI0403 001</b>	<b>REV.</b> <b>B</b>	<b>FOGLIO</b> <b>311 di 354</b>

17	6.2686E-05	5.7526E-03	1382.4	1203.9	117.23	1067.3	27.568	258.75	1.1494E+04	7.8279E+06	7.8279E+06
x( M)	12.240	0.0000	0.0000	7.2000	9.9000	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
18	6.3818E-05	6.0693E-03	1275.1	1176.3	103.08	1013.2	22.700	235.92	1.0830E+04	7.8279E+06	7.8279E+06
x( M)	12.600	0.0000	0.0000	7.3800	10.080	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
19	6.3425E-05	6.3860E-03	1267.1	1231.4	102.15	1061.7	22.202	245.71	1.1282E+04	7.8279E+06	7.8279E+06
x( M)	12.600	0.0000	0.0000	7.3800	10.260	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
20	6.1523E-05	6.7026E-03	1376.9	1401.2	116.52	1253.3	26.778	300.11	1.3240E+04	7.8279E+06	7.8279E+06
x( M)	12.240	0.0000	0.0000	7.2000	9.9000	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
Max.	6.3818E-05	6.7026E-03	1382.4	1643.8	117.23	1569.8	27.568	403.63	1.6731E+04	7.8279E+06	7.8279E+06
Pile N.	18	4	17	4	17	4	17	4	4	1	1

LOAD CASE : 17  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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	0.5846	1.0000
2	0.5445	1.0000
3	0.5791	1.0000
4	0.8661	1.0000
5	0.4955	1.0000
6	0.4615	1.0000
7	0.4951	1.0000
8	0.8053	1.0000
9	0.4945	1.0000
10	0.4606	1.0000
11	0.4941	1.0000
12	0.8053	1.0000
13	0.4955	1.0000
14	0.4615	1.0000
15	0.4951	1.0000
16	0.8053	1.0000
17	0.5845	1.0000
18	0.5445	1.0000
19	0.5791	1.0000
20	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
34535.7	-15323.1	98.3994
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-320.425	1232.99	94012.9

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
1.08259E-03	-3.93784E-03	2.52769E-05
ANGLE ROT. X,RAD	ANGLE ROT. Y,RAD	ANGLE ROT. Z,RAD
-9.26058E-07	1.26735E-06	1.76041E-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	-9.4283E-05	-3.9295E-03	1.9026E-05	-9.2606E-07	1.2674E-06	1.7604E-04
2	6.9790E-04	-3.9295E-03	2.3193E-05	-9.2606E-07	1.2674E-06	1.7604E-04
3	1.4901E-03	-3.9295E-03	2.7361E-05	-9.2606E-07	1.2674E-06	1.7604E-04
4	2.2823E-03	-3.9295E-03	3.1528E-05	-9.2606E-07	1.2674E-06	1.7604E-04
5	-9.9986E-05	-3.9337E-03	1.9026E-05	-9.2606E-07	1.2674E-06	1.7604E-04
6	6.9220E-04	-3.9337E-03	2.3193E-05	-9.2606E-07	1.2674E-06	1.7604E-04
7	1.4844E-03	-3.9337E-03	2.7361E-05	-9.2606E-07	1.2674E-06	1.7604E-04
8	2.2766E-03	-3.9337E-03	3.1528E-05	-9.2606E-07	1.2674E-06	1.7604E-04
9	-1.0569E-04	-3.9378E-03	1.9026E-05	-9.2606E-07	1.2674E-06	1.7604E-04
10	6.8650E-04	-3.9378E-03	2.3193E-05	-9.2606E-07	1.2674E-06	1.7604E-04
11	1.4787E-03	-3.9378E-03	2.7361E-05	-9.2606E-07	1.2674E-06	1.7604E-04
12	2.2709E-03	-3.9378E-03	3.1528E-05	-9.2606E-07	1.2674E-06	1.7604E-04

## APPALTATORE:

Consorzio



Soci



## ITINERARIO NAPOLI – BARI

## PROGETTAZIONE:

Mandataria



Mandanti

RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

## PROGETTO ESECUTIVO

## RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 312 di 354
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13	-1.1139E-04	-3.9420E-03	1.9026E-05	-9.2606E-07	1.2674E-06	1.7604E-04
14	6.8079E-04	-3.9420E-03	2.3193E-05	-9.2606E-07	1.2674E-06	1.7604E-04
15	1.4730E-03	-3.9420E-03	2.7361E-05	-9.2606E-07	1.2674E-06	1.7604E-04
16	2.2652E-03	-3.9420E-03	3.1528E-05	-9.2606E-07	1.2674E-06	1.7604E-04
17	-1.1710E-04	-3.9462E-03	1.9026E-05	-9.2606E-07	1.2674E-06	1.7604E-04
18	6.7509E-04	-3.9462E-03	2.3193E-05	-9.2606E-07	1.2674E-06	1.7604E-04
19	1.4673E-03	-3.9462E-03	2.7361E-05	-9.2606E-07	1.2674E-06	1.7604E-04
20	2.2595E-03	-3.9462E-03	3.1528E-05	-9.2606E-07	1.2674E-06	1.7604E-04
MINIMUM	-1.1710E-04	-3.9462E-03	1.9026E-05	-9.2606E-07	1.2674E-06	1.7604E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	2.2823E-03	-3.9295E-03	3.1528E-05	-9.2606E-07	1.2674E-06	1.7604E-04
Pile N.	4	1	4	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	-142.12	-762.70	3.3910	-0.3265	-9.1849	-2211.8
2	1149.4	-729.97	4.1468	-0.3265	-11.838	-2145.9
3	2447.6	-757.17	5.2419	-0.3265	-15.188	-2203.2
4	3519.5	-965.37	7.8676	-0.3265	-21.529	-2612.0
5	-150.72	-690.67	3.0561	-0.3265	-8.4977	-2063.3
6	1140.0	-652.78	3.6979	-0.3265	-10.839	-1974.1
7	2438.2	-689.15	4.7640	-0.3265	-14.195	-2062.7
8	3513.2	-924.85	7.5302	-0.3265	-20.888	-2536.5
9	-159.32	-690.51	3.0515	-0.3265	-8.4877	-2063.9
10	1130.7	-652.60	3.6922	-0.3265	-10.827	-1974.6
11	2428.9	-688.99	4.7570	-0.3265	-14.179	-2063.4
12	3506.9	-925.84	7.5289	-0.3265	-20.885	-2539.5
13	-167.91	-692.14	3.0550	-0.3265	-8.4947	-2068.4
14	1121.3	-654.15	3.6965	-0.3265	-10.836	-1978.9
15	2419.5	-690.61	4.7623	-0.3265	-14.190	-2067.8
16	3500.6	-926.82	7.5277	-0.3265	-20.883	-2542.6
17	-176.51	-765.93	3.3885	-0.3265	-9.1788	-2222.6
18	1112.0	-733.05	4.1437	-0.3265	-11.830	-2156.3
19	2410.2	-760.37	5.2381	-0.3265	-15.178	-2213.9
20	3494.3	-969.47	7.8625	-0.3265	-21.518	-2624.7
MINIMUM	-176.51	-969.47	3.0515	-0.3265	-21.529	-2624.7
Pile N.	17	20	9	1	4	20
MAXIMUM	3519.5	-652.60	7.8676	-0.3265	-8.4877	-1974.1
Pile N.	4	10	4	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	-9.4283E-05	-3.9295E-03	1.9026E-05	-9.2606E-07	1.2674E-06	1.7604E-04
2	6.9790E-04	-3.9295E-03	2.3193E-05	-9.2606E-07	1.2674E-06	1.7604E-04
3	1.4901E-03	-3.9295E-03	2.7361E-05	-9.2606E-07	1.2674E-06	1.7604E-04
4	2.2823E-03	-3.9295E-03	3.1528E-05	-9.2606E-07	1.2674E-06	1.7604E-04
5	-9.9986E-05	-3.9337E-03	1.9026E-05	-9.2606E-07	1.2674E-06	1.7604E-04
6	6.9220E-04	-3.9337E-03	2.3193E-05	-9.2606E-07	1.2674E-06	1.7604E-04
7	1.4844E-03	-3.9337E-03	2.7361E-05	-9.2606E-07	1.2674E-06	1.7604E-04
8	2.2766E-03	-3.9337E-03	3.1528E-05	-9.2606E-07	1.2674E-06	1.7604E-04
9	-1.0569E-04	-3.9378E-03	1.9026E-05	-9.2606E-07	1.2674E-06	1.7604E-04
10	6.8650E-04	-3.9378E-03	2.3193E-05	-9.2606E-07	1.2674E-06	1.7604E-04
11	1.4787E-03	-3.9378E-03	2.7361E-05	-9.2606E-07	1.2674E-06	1.7604E-04
12	2.2709E-03	-3.9378E-03	3.1528E-05	-9.2606E-07	1.2674E-06	1.7604E-04
13	-1.1139E-04	-3.9420E-03	1.9026E-05	-9.2606E-07	1.2674E-06	1.7604E-04
14	6.8079E-04	-3.9420E-03	2.3193E-05	-9.2606E-07	1.2674E-06	1.7604E-04
15	1.4730E-03	-3.9420E-03	2.7361E-05	-9.2606E-07	1.2674E-06	1.7604E-04
16	2.2652E-03	-3.9420E-03	3.1528E-05	-9.2606E-07	1.2674E-06	1.7604E-04
17	-1.1710E-04	-3.9462E-03	1.9026E-05	-9.2606E-07	1.2674E-06	1.7604E-04
18	6.7509E-04	-3.9462E-03	2.3193E-05	-9.2606E-07	1.2674E-06	1.7604E-04
19	1.4673E-03	-3.9462E-03	2.7361E-05	-9.2606E-07	1.2674E-06	1.7604E-04
20	2.2595E-03	-3.9462E-03	3.1528E-05	-9.2606E-07	1.2674E-06	1.7604E-04
MINIMUM	-1.1710E-04	-3.9462E-03	1.9026E-05	-9.2606E-07	1.2674E-06	1.7604E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	2.2823E-03	-3.9295E-03	3.1528E-05	-9.2606E-07	1.2674E-06	1.7604E-04
Pile N.	4	1	4	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	-142.12	-762.70	3.3910	-0.3265	-9.1849	-2211.8
2	1149.4	-729.97	4.1468	-0.3265	-11.838	-2145.9
3	2447.6	-757.17	5.2419	-0.3265	-15.188	-2203.2
4	3519.5	-965.37	7.8676	-0.3265	-21.529	-2612.0
5	-150.72	-690.67	3.0561	-0.3265	-8.4977	-2063.3
6	1140.0	-652.78	3.6979	-0.3265	-10.839	-1974.1



APPALTATORE:

Consorzio

Soci



## ITINERARIO NAPOLI – BARI

PROGETTAZIONE:

Mandataria

Mandanti

RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

PROGETTO ESECUTIVO

RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

COMMESSA  
IF28LOTTO  
01CODIFICA  
E ZZ CLDOCUMENTO  
VI0403 001REV.  
BFOGLIO  
313 di  
354

7	2438.2	-689.15	4.7640	-0.3265	-14.195	-2062.7
8	3513.2	-924.85	7.5302	-0.3265	-20.888	-2536.5
9	-159.32	-690.51	3.0515	-0.3265	-8.4877	-2063.9
10	1130.7	-652.60	3.6922	-0.3265	-10.827	-1974.6
11	2428.9	-688.99	4.7570	-0.3265	-14.179	-2063.4
12	3506.9	-925.84	7.5289	-0.3265	-20.885	-2539.5
13	-167.91	-692.14	3.0550	-0.3265	-8.4947	-2068.4
14	1121.3	-654.15	3.6965	-0.3265	-10.836	-1978.9
15	2419.5	-690.61	4.7623	-0.3265	-14.190	-2067.8
16	3500.6	-926.82	7.5277	-0.3265	-20.883	-2542.6
17	-176.51	-765.93	3.3885	-0.3265	-9.1788	-2222.6
18	1112.0	-733.05	4.1437	-0.3265	-11.830	-2156.3
19	2410.2	-760.37	5.2381	-0.3265	-15.178	-2213.9
20	3494.3	-969.47	7.8625	-0.3265	-21.518	-2624.7
MINIMUM	-176.51	-969.47	3.0515	-0.3265	-21.529	-2624.7
Pile N.	17	20	9	1	4	20
MAXIMUM	3519.5	-652.60	7.8676	-0.3265	-8.4877	-1974.1
Pile N.	4	10	4	1	9	6

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







*****	*****
1	6755.9
2	7126.8
3	8034.4
4	9875.2
5	6312.5
6	6603.1
7	7605.3
8	9643.5
9	6319.3
10	6599.4
11	7602.0
12	9649.2
13	6337.5
14	6606.9
15	7610.0
16	9654.9
17	6807.8
18	7137.2
19	8045.6
20	9899.0

MINIMUM 6312.5  
Pile N. 5  
MAXIMUM 9899.0  
Pile N. 20

\* 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	-3.9295E-03	-4.4694E-07	-914.83	-9.1849	-762.70	-1.0078	-212.54	-0.2657	80.424	7.8279E+06	7.8279E+06
x(M)	0.0000	11.520	6.8400	0.0000	0.0000	9.1800	5.0400	11.880	18.000	0.0000	0.0000
2	-3.9295E-03	-5.7552E-07	-889.42	-11.838	-729.99	-1.1927	-200.66	-0.3154	650.42	7.8279E+06	7.8279E+06
x(M)	0.0000	11.700	6.8400	0.0000	0.0000	9.3600	5.0400	12.060	18.000	0.0000	0.0000
3	-3.9295E-03	-6.7215E-07	-912.10	-15.188	-757.23	-1.4834	-210.88	-0.3975	1385.0	7.8279E+06	7.8279E+06
x(M)	0.0000	11.520	6.8400	0.0000	0.0000	9.3600	5.0400	12.060	18.000	0.0000	0.0000
4	-3.9295E-03	-6.5252E-07	-1072.5	-21.529	-965.48	-2.2370	-289.47	-0.6129	1991.6	7.8279E+06	7.8279E+06
x(M)	0.0000	10.620	6.3000	0.0000	0.0000	8.6400	5.0400	10.980	18.000	0.0000	0.0000
5	-3.9337E-03	-4.7834E-07	-855.84	-8.4977	-690.67	-0.9003	-186.01	-0.2333	85.289	7.8279E+06	7.8279E+06
x(M)	0.0000	11.880	7.0200	0.0000	0.0000	9.3600	5.0400	12.240	18.000	0.0000	0.0000
6	-3.9337E-03	-5.8639E-07	-809.20	-10.839	-652.81	-1.0170	-172.09	-0.2542	645.13	7.8279E+06	7.8279E+06
x(M)	0.0000	12.240	7.0200	0.0000	0.0000	9.7200	5.0400	12.240	18.000	0.0000	0.0000
7	-3.9337E-03	-7.1730E-07	-856.21	-14.195	-689.20	-1.3347	-185.83	-0.3512	1379.8	7.8279E+06	7.8279E+06
x(M)	0.0000	11.880	7.0200	0.0000	0.0000	9.5400	5.0400	12.240	18.000	0.0000	0.0000
8	-3.9337E-03	-6.7429E-07	-1043.0	-20.888	-924.96	-2.1395	-273.85	-0.5834	1988.1	7.8279E+06	7.8279E+06
x(M)	0.0000	10.800	6.4800	0.0000	0.0000	8.8200	5.0400	11.160	18.000	0.0000	0.0000
9	-3.9378E-03	-4.7878E-07	-855.89	-8.4877	-690.51	-0.8986	-185.81	-0.2328	90.154	7.8279E+06	7.8279E+06
x(M)	0.0000	11.880	7.0200	0.0000	0.0000	9.3600	5.0400	12.240	18.000	0.0000	0.0000
10	-3.9378E-03	-5.8672E-07	-809.14	-10.827	-652.63	-1.0150	-171.90	-0.2535	639.84	7.8279E+06	7.8279E+06
x(M)	0.0000	12.240	7.0200	0.0000	0.0000	9.7200	5.0400	12.240	18.000	0.0000	0.0000
11	-3.9378E-03	-7.1790E-07	-856.26	-14.179	-689.04	-1.3324	-185.64	-0.3504	1374.5	7.8279E+06	7.8279E+06
x(M)	0.0000	11.880	7.0200	0.0000	0.0000	9.5400	5.0400	12.240	18.000	0.0000	0.0000
12	-3.9378E-03	-6.7440E-07	-1043.9	-20.885	-925.94	-2.1388	-274.04	-0.5831	1984.5	7.8279E+06	7.8279E+06
x(M)	0.0000	10.800	6.4800	0.0000	0.0000	8.8200	5.0400	11.160	18.000	0.0000	0.0000
13	-3.9420E-03	-4.7841E-07	-857.38	-8.4947	-692.13	-0.8996	-186.26	-0.2331	95.019	7.8279E+06	7.8279E+06
x(M)	0.0000	11.880	7.0200	0.0000	0.0000	9.3600	5.0400	12.240	18.000	0.0000	0.0000
14	-3.9420E-03	-5.8633E-07	-810.60	-10.836	-654.17	-1.0162	-172.32	-0.2538	634.55	7.8279E+06	7.8279E+06
x(M)	0.0000	12.240	7.0200	0.0000	0.0000	9.7200	5.0400	12.240	18.000	0.0000	0.0000
15	-3.9420E-03	-7.1739E-07	-857.75	-14.190	-690.66	-1.3338	-186.09	-0.3508	1369.2	7.8279E+06	7.8279E+06
x(M)	0.0000	11.880	7.0200	0.0000	0.0000	9.5400	5.0400	12.240	18.000	0.0000	0.0000
16	-3.9420E-03	-6.7451E-07	-1044.9	-20.883	-926.92	-2.1381	-274.23	-0.5829	1980.9	7.8279E+06	7.8279E+06
x(M)	0.0000	10.800	6.4800	0.0000	0.0000	8.8200	5.0400	11.160	18.000	0.0000	0.0000

APPALTATORE: <b>Consorzio</b> <b>Soci</b>   			<b>ITINERARIO NAPOLI – BARI</b>					
PROGETTAZIONE: <b>Mandatario</b> <b>Mandanti</b>   			<b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
PROGETTO ESECUTIVO <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>			COMMESSA <b>IF28</b>	LOTTO <b>01</b>	CODIFICA <b>E ZZ CL</b>	DOCUMENTO <b>VI0403 001</b>	REV. <b>B</b>	FOGLIO <b>314 di 354</b>

17	-3.9462E-03	-4.4718E-07	-918.12	-9.1788	-765.93	-1.0064	-213.12	-0.2651	99.883	7.8279E+06	7.8279E+06
x (M)	0.0000	11.520	6.8400	0.0000	0.0000	9.1800	5.0400	11.880	18.000	0.0000	0.0000
18	-3.9462E-03	-5.7573E-07	-892.58	-11.830	-733.08	-1.1909	-201.21	-0.3147	629.26	7.8279E+06	7.8279E+06
x (M)	0.0000	11.700	6.8400	0.0000	0.0000	9.3600	5.0400	12.060	18.000	0.0000	0.0000
19	-3.9462E-03	-6.7245E-07	-915.38	-15.178	-760.44	-1.4815	-211.46	-0.3967	1363.9	7.8279E+06	7.8279E+06
x (M)	0.0000	11.520	6.8400	0.0000	0.0000	9.3600	5.0400	12.060	18.000	0.0000	0.0000
20	-3.9462E-03	-6.5299E-07	-1076.3	-21.518	-969.57	-2.2341	-290.27	-0.6119	1977.4	7.8279E+06	7.8279E+06
x (M)	0.0000	10.620	6.3000	0.0000	0.0000	8.8200	5.0400	18.000	18.000	0.0000	0.0000
Min.	-3.9462E-03	-7.1790E-07	-1076.3	-21.529	-969.57	-2.2370	-290.27	-0.6129	80.424	7.8279E+06	7.8279E+06
Pile N.	17	11	20	4	20	4	20	4	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	9.6188E-05	1.9026E-05	2211.8	4.3295	214.38	3.3910	57.597	0.9628	6755.9	7.8279E+06	7.8279E+06
x (M)	11.520	0.0000	6.6600	0.0000	9.3600	0.0000	12.060	5.0400	0.0000	0.0000	0.0000
2	9.9353E-05	2.3193E-05	2145.9	5.1916	204.95	4.1469	54.621	1.1497	7126.8	7.8279E+06	7.8279E+06
x (M)	11.700	0.0000	6.8400	0.0000	9.3600	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
3	9.6804E-05	2.7361E-05	2203.2	6.3393	213.55	5.2423	57.282	1.4617	8034.4	7.8279E+06	7.8279E+06
x (M)	11.520	0.0000	6.8400	0.0000	9.3600	0.0000	12.060	5.0400	0.0000	0.0000	0.0000
4	8.0726E-05	3.1528E-05	2612.0	8.6473	277.06	7.8685	75.710	2.3534	9875.2	7.8279E+06	7.8279E+06
x (M)	10.620	0.0000	6.3000	0.0000	8.6400	0.0000	10.980	5.0400	0.0000	0.0000	0.0000
5	1.0312E-04	1.9026E-05	2063.3	4.0454	192.01	3.0561	50.617	0.8410	6312.5	7.8279E+06	7.8279E+06
x (M)	11.880	0.0000	0.0000	6.8400	9.5400	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
6	1.0142E-04	2.3193E-05	1974.1	4.7232	174.75	3.6981	43.958	0.9843	6603.1	7.8279E+06	7.8279E+06
x (M)	12.240	0.0000	7.0200	9.7200	0.0000	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
7	1.0343E-04	2.7361E-05	2062.7	5.9442	192.34	4.7644	50.664	1.2865	7605.3	7.8279E+06	7.8279E+06
x (M)	11.880	0.0000	7.0200	9.5400	0.0000	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
8	8.3488E-05	3.1528E-05	2536.5	8.4842	265.18	7.5310	72.127	2.2239	9643.5	7.8279E+06	7.8279E+06
x (M)	10.800	0.0000	6.4800	0.0000	8.8200	0.0000	11.160	5.0400	0.0000	0.0000	0.0000
9	1.0332E-04	1.9026E-05	2063.9	4.0411	191.89	3.0515	50.555	0.8391	6319.3	7.8279E+06	7.8279E+06
x (M)	11.880	0.0000	0.0000	6.8400	9.5400	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
10	1.0159E-04	2.3193E-05	1974.6	4.7178	174.59	3.6924	43.892	0.9821	6599.4	7.8279E+06	7.8279E+06
x (M)	12.240	0.0000	7.0200	9.7200	0.0000	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
11	1.0364E-04	2.7361E-05	2063.4	5.9379	192.22	4.7574	50.602	1.2836	7602.0	7.8279E+06	7.8279E+06
x (M)	11.880	0.0000	0.0000	7.0200	9.5400	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
12	8.3597E-05	3.1528E-05	2539.5	8.4824	265.40	7.5298	72.178	2.2228	9649.2	7.8279E+06	7.8279E+06
x (M)	10.800	0.0000	6.4800	0.0000	8.8200	0.0000	11.160	5.0400	0.0000	0.0000	0.0000
13	1.0337E-04	1.9026E-05	2068.4	4.0436	192.31	3.0550	50.675	0.8401	6337.5	7.8279E+06	7.8279E+06
x (M)	11.880	0.0000	6.8400	0.0000	9.5400	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
14	1.0164E-04	2.3193E-05	1978.9	4.7209	174.99	3.6966	44.000	0.9833	6606.9	7.8279E+06	7.8279E+06
x (M)	12.240	0.0000	7.0200	9.7200	0.0000	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
15	1.0368E-04	2.7361E-05	2067.8	5.9416	192.65	4.7626	50.722	1.2852	7610.0	7.8279E+06	7.8279E+06
x (M)	11.880	0.0000	7.0200	9.5400	0.0000	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
16	8.3707E-05	3.1528E-05	2542.6	8.4806	265.61	7.5286	72.229	2.2217	9654.9	7.8279E+06	7.8279E+06
x (M)	10.800	0.0000	6.4800	0.0000	8.8200	0.0000	11.160	5.0400	0.0000	0.0000	0.0000
17	9.6674E-05	1.9026E-05	2222.6	4.3258	215.07	3.3885	57.747	0.9608	6807.8	7.8279E+06	7.8279E+06
x (M)	11.520	0.0000	0.0000	6.6600	9.3600	0.0000	12.060	5.0400	0.0000	0.0000	0.0000
18	9.9845E-05	2.3193E-05	2156.3	5.1870	205.57	4.1438	54.756	1.1474	7137.2	7.8279E+06	7.8279E+06
x (M)	11.700	0.0000	6.8400	0.0000	9.3600	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
19	9.7291E-05	2.7361E-05	2213.9	6.3338	214.24	5.2385	57.429	1.4587	8045.6	7.8279E+06	7.8279E+06
x (M)	11.520	0.0000	6.8400	0.0000	9.3600	0.0000	12.060	5.0400	0.0000	0.0000	0.0000
20	8.1152E-05	3.1528E-05	2624.7	8.6398	277.95	7.8634	75.927	2.3487	9899.0	7.8279E+06	7.8279E+06
x (M)	10.620	0.0000	6.3000	0.0000	8.6400	0.0000	10.980	5.0400	0.0000	0.0000	0.0000
Max.	1.0368E-04	3.1528E-05	2624.7	8.6473	277.95	7.8685	75.927	2.3534	9899.0	7.8279E+06	7.8279E+06
Pile N.	15	4	20	4	20	4	20	4	20	1	1

LOAD CASE : 18  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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	0.5997	1.0000
2	0.5585	1.0000
3	0.5908	1.0000
4	0.8661	1.0000
5	0.4995	1.0000
6	0.4631	1.0000
7	0.4951	1.0000
8	0.7967	1.0000
9	0.4968	1.0000
10	0.4606	1.0000
11	0.4927	1.0000
12	0.7956	1.0000
13	0.4978	1.0000
14	0.4615	1.0000
15	0.4937	1.0000

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>				
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>					
<b>COMMESSA</b> <b>IF28</b>	<b>LOTTO</b> <b>01</b>	<b>CODIFICA</b> <b>E ZZ CL</b>	<b>DOCUMENTO</b> <b>VI0403 001</b>	<b>REV.</b> <b>B</b>	<b>FOGLIO</b> <b>315 di 354</b>

16	0.7956	1.0000
17	0.5845	1.0000
18	0.5424	1.0000
19	0.5757	1.0000
20	0.8556	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN	HOR. LOAD Y, KN	HOR. LOAD Z, KN
54152.2	251.439	98.3994
MOMENT X , KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-335.232	1266.34	39807.7

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL , M	HORIZONTAL Y, M	HORIZONTAL Z, M
1.65904E-03	-1.03074E-04	2.21030E-05
ANGLE ROT. X,RAD	ANGLE ROT. Y,RAD	ANGLE ROT. Z,RAD
-7.97626E-07	1.26030E-06	4.81875E-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	1.3451E-03	-9.5895E-05	1.6719E-05	-7.9763E-07	1.2603E-06	4.8187E-05
2	1.5620E-03	-9.5895E-05	2.0308E-05	-7.9763E-07	1.2603E-06	4.8187E-05
3	1.7788E-03	-9.5895E-05	2.3898E-05	-7.9763E-07	1.2603E-06	4.8187E-05
4	1.9956E-03	-9.5895E-05	2.7487E-05	-7.9763E-07	1.2603E-06	4.8187E-05
5	1.3395E-03	-9.9485E-05	1.6719E-05	-7.9763E-07	1.2603E-06	4.8187E-05
6	1.5563E-03	-9.9485E-05	2.0308E-05	-7.9763E-07	1.2603E-06	4.8187E-05
7	1.7731E-03	-9.9485E-05	2.3898E-05	-7.9763E-07	1.2603E-06	4.8187E-05
8	1.9900E-03	-9.9485E-05	2.7487E-05	-7.9763E-07	1.2603E-06	4.8187E-05
9	1.3338E-03	-1.0307E-04	1.6719E-05	-7.9763E-07	1.2603E-06	4.8187E-05
10	1.5506E-03	-1.0307E-04	2.0308E-05	-7.9763E-07	1.2603E-06	4.8187E-05
11	1.7675E-03	-1.0307E-04	2.3898E-05	-7.9763E-07	1.2603E-06	4.8187E-05
12	1.9843E-03	-1.0307E-04	2.7487E-05	-7.9763E-07	1.2603E-06	4.8187E-05
13	1.3281E-03	-1.0666E-04	1.6719E-05	-7.9763E-07	1.2603E-06	4.8187E-05
14	1.5450E-03	-1.0666E-04	2.0308E-05	-7.9763E-07	1.2603E-06	4.8187E-05
15	1.7618E-03	-1.0666E-04	2.3898E-05	-7.9763E-07	1.2603E-06	4.8187E-05
16	1.9786E-03	-1.0666E-04	2.7487E-05	-7.9763E-07	1.2603E-06	4.8187E-05
17	1.3224E-03	-1.1025E-04	1.6719E-05	-7.9763E-07	1.2603E-06	4.8187E-05
18	1.5393E-03	-1.1025E-04	2.0308E-05	-7.9763E-07	1.2603E-06	4.8187E-05
19	1.7561E-03	-1.1025E-04	2.3898E-05	-7.9763E-07	1.2603E-06	4.8187E-05
20	1.9730E-03	-1.1025E-04	2.7487E-05	-7.9763E-07	1.2603E-06	4.8187E-05
MINIMUM	1.3224E-03	-1.1025E-04	1.6719E-05	-7.9763E-07	1.2603E-06	4.8187E-05
Pile N.	17	17	1	1	1	1
MAXIMUM	1.9956E-03	-9.5895E-05	2.7487E-05	-7.9763E-07	1.2603E-06	4.8187E-05
Pile N.	4	1	4	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	2210.0	14.531	3.4363	-0.2812	-8.9688	111.31
2	2565.3	14.549	4.2374	-0.2812	-11.661	111.00
3	2920.7	14.543	5.3206	-0.2812	-14.891	111.22
4	3202.7	14.226	7.6504	-0.2812	-20.399	112.42
5	2200.7	13.657	3.1142	-0.2812	-8.3518	107.68
6	2556.1	13.673	3.8403	-0.2812	-10.883	107.36
7	2911.4	13.667	4.8550	-0.2812	-13.987	107.61
8	3196.4	13.231	7.3247	-0.2812	-19.820	108.95
9	2191.4	12.778	3.1051	-0.2812	-8.3340	104.82
10	2546.8	12.824	3.8296	-0.2812	-10.861	104.57
11	2902.1	12.792	4.8427	-0.2812	-13.962	104.77
12	3190.2	12.128	7.3195	-0.2812	-19.811	105.68
13	2182.1	11.896	3.1085	-0.2812	-8.3405	101.99
14	2537.5	11.973	3.8337	-0.2812	-10.870	101.80
15	2892.8	11.913	4.8479	-0.2812	-13.973	101.94
16	3183.9	11.022	7.3196	-0.2812	-19.811	102.41
17	2172.8	10.729	3.3893	-0.2812	-8.8800	99.302
18	2528.2	10.877	4.1728	-0.2812	-11.536	99.236
19	2883.5	10.769	5.2493	-0.2812	-14.755	99.264
20	3177.6	9.6602	7.6023	-0.2812	-20.314	99.029

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   		<b>ITINERARIO NAPOLI – BARI</b>					
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   		<b>RADDOPPIO TRATTA APICE – ORSARA I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>		<b>COMMESSA</b> <b>IF28</b>	<b>LOTTO</b> <b>01</b>	<b>CODIFICA</b> <b>E ZZ CL</b>	<b>DOCUMENTO</b> <b>VI0403 001</b>	<b>REV.</b> <b>B</b>	<b>FOGLIO</b> <b>316 di 354</b>

MINIMUM	2172.8	9.6602	3.1051	-0.2812	-20.399	99.029
Pile N.	17	20	9	1	4	20
MAXIMUM	3202.7	14.549	7.6504	-0.2812	-8.3340	112.42
Pile N.	4	2	4	1	9	4

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	1.3451E-03	-9.5895E-05	1.6719E-05	-7.9763E-07	1.2603E-06	4.8187E-05
2	1.5620E-03	-9.5895E-05	2.0308E-05	-7.9763E-07	1.2603E-06	4.8187E-05
3	1.7788E-03	-9.5895E-05	2.3898E-05	-7.9763E-07	1.2603E-06	4.8187E-05
4	1.9956E-03	-9.5895E-05	2.7487E-05	-7.9763E-07	1.2603E-06	4.8187E-05
5	1.3395E-03	-9.9485E-05	1.6719E-05	-7.9763E-07	1.2603E-06	4.8187E-05
6	1.5563E-03	-9.9485E-05	2.0308E-05	-7.9763E-07	1.2603E-06	4.8187E-05
7	1.7731E-03	-9.9485E-05	2.3898E-05	-7.9763E-07	1.2603E-06	4.8187E-05
8	1.9900E-03	-9.9485E-05	2.7487E-05	-7.9763E-07	1.2603E-06	4.8187E-05
9	1.3338E-03	-1.0307E-04	1.6719E-05	-7.9763E-07	1.2603E-06	4.8187E-05
10	1.5506E-03	-1.0307E-04	2.0308E-05	-7.9763E-07	1.2603E-06	4.8187E-05
11	1.7675E-03	-1.0307E-04	2.3898E-05	-7.9763E-07	1.2603E-06	4.8187E-05
12	1.9843E-03	-1.0307E-04	2.7487E-05	-7.9763E-07	1.2603E-06	4.8187E-05
13	1.3281E-03	-1.0666E-04	1.6719E-05	-7.9763E-07	1.2603E-06	4.8187E-05
14	1.5450E-03	-1.0666E-04	2.0308E-05	-7.9763E-07	1.2603E-06	4.8187E-05
15	1.7618E-03	-1.0666E-04	2.3898E-05	-7.9763E-07	1.2603E-06	4.8187E-05
16	1.9786E-03	-1.0666E-04	2.7487E-05	-7.9763E-07	1.2603E-06	4.8187E-05
17	1.3224E-03	-1.1025E-04	1.6719E-05	-7.9763E-07	1.2603E-06	4.8187E-05
18	1.5393E-03	-1.1025E-04	2.0308E-05	-7.9763E-07	1.2603E-06	4.8187E-05
19	1.7561E-03	-1.1025E-04	2.3898E-05	-7.9763E-07	1.2603E-06	4.8187E-05
20	1.9730E-03	-1.1025E-04	2.7487E-05	-7.9763E-07	1.2603E-06	4.8187E-05
MINIMUM	1.3224E-03	-1.1025E-04	1.6719E-05	-7.9763E-07	1.2603E-06	4.8187E-05
Pile N.	17	17	1	1	1	1
MAXIMUM	1.9956E-03	-9.5895E-05	2.7487E-05	-7.9763E-07	1.2603E-06	4.8187E-05
Pile N.	4	1	4	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	2210.0	14.531	3.4363	-0.2812	-8.9688	111.31
2	2565.3	14.549	4.2374	-0.2812	-11.661	111.00
3	2920.7	14.543	5.3206	-0.2812	-14.891	111.22
4	3202.7	14.226	7.6504	-0.2812	-20.399	112.42
5	2200.7	13.657	3.1142	-0.2812	-8.3518	107.68
6	2556.1	13.673	3.8403	-0.2812	-10.883	107.36
7	2911.4	13.667	4.8550	-0.2812	-13.987	107.61
8	3196.4	13.231	7.3247	-0.2812	-19.820	108.95
9	2191.4	12.778	3.1051	-0.2812	-8.3340	104.82
10	2546.8	12.824	3.8296	-0.2812	-10.861	104.57
11	2902.1	12.792	4.8427	-0.2812	-13.962	104.77
12	3190.2	12.128	7.3195	-0.2812	-19.811	105.68
13	2182.1	11.896	3.1085	-0.2812	-8.3405	101.99
14	2537.5	11.973	3.8337	-0.2812	-10.870	101.80
15	2892.8	11.913	4.8479	-0.2812	-13.973	101.94
16	3183.9	11.022	7.3196	-0.2812	-19.811	102.41
17	2172.8	10.729	3.3893	-0.2812	-8.8800	99.302
18	2528.2	10.877	4.1728	-0.2812	-11.536	99.236
19	2883.5	10.769	5.2493	-0.2812	-14.755	99.264
20	3177.6	9.6602	7.6023	-0.2812	-20.314	99.029
MINIMUM	2172.8	9.6602	3.1051	-0.2812	-20.399	99.029
Pile N.	17	20	9	1	4	20
MAXIMUM	3202.7	14.549	7.6504	-0.2812	-8.3340	112.42
Pile N.	4	2	4	1	9	4

PILE GROUP	STRESS, KN/ M**2
*****	*****
1	1587.6
2	1788.6
3	1991.5
4	2157.2
5	1571.3
6	1772.1
7	1975.0
8	2143.0
9	1557.4
10	1758.5
11	1961.2
12	2129.8
13	1543.7
14	1744.9
15	1947.6
16	2116.5

APPALTATORE: Consorzio <span style="margin-left: 100px;">Soci</span> 	<b>ITINERARIO NAPOLI – BARI</b>
PROGETTAZIONE: Mandataria <span style="margin-left: 100px;">Mandanti</span> 	<b>RADDOPPIO TRATTA APICE – ORSARA I LOTTO FUNZIONALE APICE – HIRPINIA</b>
PROGETTO ESECUTIVO <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	COMMESSA <span style="margin-left: 40px;">LOTTO</span> <span style="margin-left: 40px;">CODIFICA</span> <span style="margin-left: 40px;">DOCUMENTO</span> <span style="margin-left: 40px;">REV.</span> <span style="float: right;">FOGLIO</span> IF28 <span style="margin-left: 40px;">01</span> <span style="margin-left: 40px;">E ZZ CL</span> <span style="margin-left: 40px;">VI0403 001</span> <span style="margin-left: 40px;">B</span> <span style="float: right;">317 di 354</span>

17	1530.5
18	1732.2
19	1934.6
20	2103.3
MINIMUM	1530.5
Pile N.	17
MAXIMUM	2157.2
Pile N.	4

\* EFFECTS FOR Laterally Loaded Pile \*  
\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT		SHEAR		SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG.	
			z-DIR KN- M	y-DIR KN- M	y-DIR KN	z-DIR KN				z-DIR KN- M**2	y-DIR KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	-9.5896E-05	-3.8609E-07	-111.31	-8.9688	-1.0594	-1.1787	-1.1808	-0.3293	1250.6	7.8279E+06	7.8279E+06
x(M)	0.0000	10.440	0.0000	0.0000	11.520	8.2800	1.4400	10.800	18.000	0.0000	0.0000
2	-9.5896E-05	-4.8740E-07	-111.00	-11.661	-1.0417	-1.4015	-1.0986	-0.3946	1451.7	7.8279E+06	7.8279E+06
x(M)	0.0000	10.620	0.0000	0.0000	11.700	8.4600	1.4400	10.980	18.000	0.0000	0.0000
3	-9.5896E-05	-5.7123E-07	-111.22	-14.891	-1.0557	-1.7191	-1.1631	-0.4853	1652.8	7.8279E+06	7.8279E+06
x(M)	0.0000	10.440	0.0000	0.0000	11.520	8.4600	1.4400	10.800	18.000	0.0000	0.0000
4	-9.5896E-05	-6.0167E-07	-112.42	-20.399	-1.1694	-2.4319	-1.7122	-0.7015	1812.4	7.8279E+06	7.8279E+06
x(M)	0.0000	9.9000	0.0000	0.0000	11.160	8.1000	1.4400	10.080	18.000	0.0000	0.0000
5	-9.9485E-05	-4.0862E-07	-107.68	-8.3518	-0.9332	-1.0685	-1.0606	-0.3007	1245.3	7.8279E+06	7.8279E+06
x(M)	0.0000	10.620	0.0000	0.0000	12.060	8.4600	1.4400	11.160	18.000	0.0000	0.0000
6	-9.9485E-05	-5.1914E-07	-107.36	-10.883	-0.9232	-1.2657	-0.9824	-0.3615	1446.4	7.8279E+06	7.8279E+06
x(M)	0.0000	10.980	0.0000	0.0000	12.600	8.6400	1.4400	11.340	18.000	0.0000	0.0000
7	-9.9485E-05	-6.0492E-07	-107.61	-13.987	-0.9332	-1.5630	-1.0512	-0.4457	1647.5	7.8279E+06	7.8279E+06
x(M)	0.0000	10.800	0.0000	0.0000	12.060	8.6400	1.4400	11.340	18.000	0.0000	0.0000
8	-9.9485E-05	-6.1299E-07	-108.95	-19.820	-1.0424	-2.3322	-1.6992	-0.6667	1808.8	7.8279E+06	7.8279E+06
x(M)	0.0000	9.9000	0.0000	0.0000	11.340	8.1000	1.4400	10.260	18.000	0.0000	0.0000
9	-1.0307E-04	-4.0927E-07	-104.82	-8.3340	-0.8636	-1.0653	-1.1341	-0.2999	1240.1	7.8279E+06	7.8279E+06
x(M)	0.0000	10.800	0.0000	0.0000	12.240	8.4600	1.4400	11.160	18.000	0.0000	0.0000
10	-1.0307E-04	-5.2021E-07	-104.57	-10.861	-0.8602	-1.2619	-1.0507	-0.3606	1441.2	7.8279E+06	7.8279E+06
x(M)	0.0000	10.980	0.0000	0.0000	12.420	8.6400	1.4400	11.340	18.000	0.0000	0.0000
11	-1.0307E-04	-6.0592E-07	-104.77	-13.962	-0.8642	-1.5588	-1.1246	-0.4447	1642.3	7.8279E+06	7.8279E+06
x(M)	0.0000	10.800	0.0000	0.0000	12.240	8.6400	1.4400	11.340	18.000	0.0000	0.0000
12	-1.0307E-04	-6.1315E-07	-105.68	-19.811	-0.9512	-2.3306	-1.8222	-0.6661	1805.3	7.8279E+06	7.8279E+06
x(M)	0.0000	9.9000	0.0000	0.0000	11.520	8.1000	1.4400	10.260	18.000	0.0000	0.0000
13	-1.0666E-04	-4.0903E-07	-101.99	-8.3405	-0.8086	-1.0665	-1.2199	-0.3002	1234.8	7.8279E+06	7.8279E+06
x(M)	0.0000	10.620	0.0000	0.0000	12.420	8.4600	1.6200	11.160	18.000	0.0000	0.0000
14	-1.0666E-04	-5.1980E-07	-101.80	-10.870	-0.8071	-1.2633	-1.1302	-0.3609	1435.9	7.8279E+06	7.8279E+06
x(M)	0.0000	10.980	0.0000	0.0000	12.420	8.6400	1.6200	11.340	18.000	0.0000	0.0000
15	-1.0666E-04	-6.0550E-07	-101.94	-13.973	-0.8094	-1.5605	-1.2097	-0.4451	1637.0	7.8279E+06	7.8279E+06
x(M)	0.0000	10.800	0.0000	0.0000	12.420	8.6400	1.6200	11.340	18.000	0.0000	0.0000
16	-1.0666E-04	-6.1314E-07	-102.41	-19.811	-0.8719	-2.3306	-1.9561	-0.6661	1801.7	7.8279E+06	7.8279E+06
x(M)	0.0000	9.9000	0.0000	0.0000	11.700	8.1000	1.6200	10.260	18.000	0.0000	0.0000
17	-1.1025E-04	-3.8927E-07	-99.302	-8.8800	-0.7648	-1.1622	-1.5365	-0.3251	1229.6	7.8279E+06	7.8279E+06
x(M)	0.0000	10.440	0.0000	0.0000	12.240	8.2800	1.6200	10.800	18.000	0.0000	0.0000
18	-1.1025E-04	-4.9226E-07	-99.236	-11.536	-0.7631	-1.3795	-1.4251	-0.3890	1430.7	7.8279E+06	7.8279E+06
x(M)	0.0000	10.620	0.0000	0.0000	12.420	8.4600	1.6200	10.980	18.000	0.0000	0.0000
19	-1.1025E-04	-5.7531E-07	-99.264	-14.755	-0.7646	-1.6956	-1.5130	-0.4789	1631.7	7.8279E+06	7.8279E+06
x(M)	0.0000	10.440	0.0000	0.0000	12.240	8.4600	1.6200	10.980	18.000	0.0000	0.0000
20	-1.1025E-04	-6.0350E-07	-99.029	-20.314	-0.8189	-2.4176	-2.2512	-0.6960	1798.2	7.8279E+06	7.8279E+06
x(M)	0.0000	9.9000	0.0000	0.0000	11.700	8.1000	1.6200	10.080	18.000	0.0000	0.0000
Min.	-1.1025E-04	-6.1315E-07	-112.42	-20.399	-1.1694	-2.4319	-2.2512	-0.7015	1229.6	7.8279E+06	7.8279E+06
Pile N.	17	12	4	4	4	4	20	4	17	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT		SHEAR		SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG.	
			z-DIR KN- M	y-DIR KN- M	y-DIR KN	z-DIR KN				z-DIR KN- M**2	y-DIR KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	8.9605E-06	1.6719E-05	4.3793	4.7964	17.092	3.4366	4.3684	1.7540	1587.6	7.8279E+06	7.8279E+06
x(M)	5.7600	0.0000	9.9000	5.9400	3.6000	0.0000	6.3000	5.0400	0.0000	0.0000	0.0000
2	9.3291E-06	2.0308E-05	4.4183	5.7786	16.922	4.2377	4.2514	2.1173	1788.6	7.8279E+06	7.8279E+06
x(M)	5.7600	0.0000	9.9000	6.1200	3.6000	0.0000	6.4800	5.0400	0.0000	0.0000	0.0000
3	9.0417E-06	2.3898E-05	4.3909	6.9974	17.063	5.3211	4.3455	2.6586	1991.5	7.8279E+06	7.8279E+06
x(M)	5.7600	0.0000	9.9000	6.1200	3.6000	0.0000	6.3000	5.0400	0.0000	0.0000	0.0000
4	7.2878E-06	2.7487E-05	4.2069	9.1536	18.002	7.6512	5.0277	3.9790	2157.2	7.8279E+06	7.8279E+06
x(M)	5.5800	0.0000	9.3600	5.9400	3.6000	0.0000	6.1200	5.0400	0.0000	0.0000	0.0000
5	9.1111E-06	1.6719E-05	4.1494	4.5218	16.031	3.1144	3.8445	1.5518	1571.3	7.8279E+06	7.8279E+06
x(M)	5.9400	0.0000	10.260	6.1200	3.7800	0.0000	5.0400	5.0400	0.0000	0.0000	0.0000
6	9.5147E-06	2.0308E-05	4.1922	5.4271	15.862	3.8406	3.7381	1.8656	1772.1	7.8279E+06	7.8279E+06
x(M)	5.9400	0.0000	10.260	6.3000	3.6000	0.0000	6.6000	5.0400	0.0000	0.0000	0.0000
7	9.1633E-06	2.3898E-05	4.1578	6.5969	16.018	4.8555	3.8342	2.3627	1975.0	7.8279E+06	7.8279E+06
x(M)	5.9400	0.0000	10.260	6.3000	3.7800	0.0000	6.6000	5.0400	0.0000	0.0000	0.0000
8	6.9620E-06	2.7487E-05	3.9047	8.9218	17.117	7.3254	4.5763	3.7785	2143.0	7.8279E+06	7.8279E+06
x(M)	5.7600	0.0000	9.7200	5.9400	3.7800	0.0000	6.4800	5.0400	0.0000	0.0000	0.0000
9	8.4098E-06	1.6719E-05	3.8589	4.5136	15.422	3.1054	3.6293	1.5461	1557.4	7.8279E+06	7.8279E+06
x(M)	6.1200	0.0000	10.440	6.1200	3.9600	0.0000	6.8400	5.0400	0.0000	0.0000	0.0000
10	8.7905E-06	2.0308E-05	3.9035	5.4175	15.263	3.8299	3.5319	1.8588	1758.5	7.8279E+06	7.8279E+06
x(M)	6.1200	0.0000	10.440	6.3000	3.9600	0.0000	6.8400	5.0400	0.0000	0.0000	0.0000



## APPALTATORE:

Consorzio

Soci



## PROGETTAZIONE:

Mandataria

Mandanti



## PROGETTO ESECUTIVO

## RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

## ITINERARIO NAPOLI – BARI

RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO
IF28	01	E ZZ CL	VI0403 001	B	319 di 354

1	2.1897E-03	-1.3919E-03	5.7769E-03	-7.0389E-05	1.5812E-04	1.1675E-04
2	2.7150E-03	-1.3919E-03	6.0936E-03	-7.0389E-05	1.5812E-04	1.1675E-04
3	3.2404E-03	-1.3919E-03	6.4104E-03	-7.0389E-05	1.5812E-04	1.1675E-04
4	3.7658E-03	-1.3919E-03	6.7272E-03	-7.0389E-05	1.5812E-04	1.1675E-04
5	1.4781E-03	-1.7086E-03	5.7769E-03	-7.0389E-05	1.5812E-04	1.1675E-04
6	2.0035E-03	-1.7086E-03	6.0936E-03	-7.0389E-05	1.5812E-04	1.1675E-04
7	2.5289E-03	-1.7086E-03	6.4104E-03	-7.0389E-05	1.5812E-04	1.1675E-04
8	3.0542E-03	-1.7086E-03	6.7272E-03	-7.0389E-05	1.5812E-04	1.1675E-04
9	7.6659E-04	-2.0254E-03	5.7769E-03	-7.0389E-05	1.5812E-04	1.1675E-04
10	1.2920E-03	-2.0254E-03	6.0936E-03	-7.0389E-05	1.5812E-04	1.1675E-04
11	1.8173E-03	-2.0254E-03	6.4104E-03	-7.0389E-05	1.5812E-04	1.1675E-04
12	2.3427E-03	-2.0254E-03	6.7272E-03	-7.0389E-05	1.5812E-04	1.1675E-04
13	5.5056E-05	-2.3421E-03	5.7769E-03	-7.0389E-05	1.5812E-04	1.1675E-04
14	5.8042E-04	-2.3421E-03	6.0936E-03	-7.0389E-05	1.5812E-04	1.1675E-04
15	1.1058E-03	-2.3421E-03	6.4104E-03	-7.0389E-05	1.5812E-04	1.1675E-04
16	1.6312E-03	-2.3421E-03	6.7272E-03	-7.0389E-05	1.5812E-04	1.1675E-04
17	-6.5648E-04	-2.6589E-03	5.7769E-03	-7.0389E-05	1.5812E-04	1.1675E-04
18	-1.3111E-04	-2.6589E-03	6.0936E-03	-7.0389E-05	1.5812E-04	1.1675E-04
19	3.9426E-04	-2.6589E-03	6.4104E-03	-7.0389E-05	1.5812E-04	1.1675E-04
20	9.1963E-04	-2.6589E-03	6.7272E-03	-7.0389E-05	1.5812E-04	1.1675E-04
MINIMUM	-6.5648E-04	-2.6589E-03	5.7769E-03	-7.0389E-05	1.5812E-04	1.1675E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	3.7658E-03	-1.3919E-03	6.7272E-03	-7.0389E-05	1.5812E-04	1.1675E-04
Pile N.	4	1	4	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	3417.1	-266.13	1360.1	-24.817	-3923.1	-647.16
2	3997.8	-249.89	1360.2	-24.817	-4007.6	-615.55
3	4578.5	-246.89	1421.3	-24.817	-4213.5	-609.61
4	4976.0	-259.96	1569.8	-24.817	-4595.9	-635.03
5	2428.0	-268.06	1064.7	-24.817	-3313.1	-734.54
6	3211.4	-238.94	1013.5	-24.817	-3271.5	-672.18
7	3792.0	-236.43	1060.8	-24.817	-3445.2	-666.64
8	4372.7	-266.42	1250.0	-24.817	-3931.8	-730.96
9	1261.9	-319.01	1024.1	-24.817	-3222.9	-917.63
10	2122.9	-283.59	970.52	-24.817	-3172.9	-840.28
11	2983.8	-280.77	1016.3	-24.817	-3343.3	-834.11
12	3586.3	-318.44	1207.4	-24.817	-3838.0	-916.51
13	91.065	-379.37	1020.2	-24.817	-3212.4	-1120.3
14	956.86	-337.81	967.11	-24.817	-3163.1	-1029.1
15	1817.8	-334.58	1012.9	-24.817	-3333.7	-1022.0
16	2678.8	-378.84	1203.3	-24.817	-3827.6	-1119.6
17	-987.76	-461.81	1067.3	-24.817	-3312.4	-1370.3
18	-197.64	-412.30	1013.2	-24.817	-3264.7	-1262.8
19	651.78	-408.63	1061.7	-24.817	-3441.8	-1254.9
20	1512.7	-459.39	1253.9	-24.817	-3935.3	-1365.5
MINIMUM	-987.76	-461.81	967.11	-24.817	-4595.9	-1370.3
Pile N.	17	17	14	1	4	17
MAXIMUM	4976.0	-236.43	1569.8	-24.817	-3163.1	-609.61
Pile N.	4	7	4	1	14	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	2.1897E-03	-1.3919E-03	5.7769E-03	-7.0389E-05	1.5812E-04	1.1675E-04
2	2.7150E-03	-1.3919E-03	6.0936E-03	-7.0389E-05	1.5812E-04	1.1675E-04
3	3.2404E-03	-1.3919E-03	6.4104E-03	-7.0389E-05	1.5812E-04	1.1675E-04
4	3.7658E-03	-1.3919E-03	6.7272E-03	-7.0389E-05	1.5812E-04	1.1675E-04
5	1.4781E-03	-1.7086E-03	5.7769E-03	-7.0389E-05	1.5812E-04	1.1675E-04
6	2.0035E-03	-1.7086E-03	6.0936E-03	-7.0389E-05	1.5812E-04	1.1675E-04
7	2.5289E-03	-1.7086E-03	6.4104E-03	-7.0389E-05	1.5812E-04	1.1675E-04
8	3.0542E-03	-1.7086E-03	6.7272E-03	-7.0389E-05	1.5812E-04	1.1675E-04
9	7.6659E-04	-2.0254E-03	5.7769E-03	-7.0389E-05	1.5812E-04	1.1675E-04
10	1.2920E-03	-2.0254E-03	6.0936E-03	-7.0389E-05	1.5812E-04	1.1675E-04
11	1.8173E-03	-2.0254E-03	6.4104E-03	-7.0389E-05	1.5812E-04	1.1675E-04
12	2.3427E-03	-2.0254E-03	6.7272E-03	-7.0389E-05	1.5812E-04	1.1675E-04
13	5.5056E-05	-2.3421E-03	5.7769E-03	-7.0389E-05	1.5812E-04	1.1675E-04
14	5.8042E-04	-2.3421E-03	6.0936E-03	-7.0389E-05	1.5812E-04	1.1675E-04
15	1.1058E-03	-2.3421E-03	6.4104E-03	-7.0389E-05	1.5812E-04	1.1675E-04
16	1.6312E-03	-2.3421E-03	6.7272E-03	-7.0389E-05	1.5812E-04	1.1675E-04
17	-6.5648E-04	-2.6589E-03	5.7769E-03	-7.0389E-05	1.5812E-04	1.1675E-04
18	-1.3111E-04	-2.6589E-03	6.0936E-03	-7.0389E-05	1.5812E-04	1.1675E-04
19	3.9426E-04	-2.6589E-03	6.4104E-03	-7.0389E-05	1.5812E-04	1.1675E-04
20	9.1963E-04	-2.6589E-03	6.7272E-03	-7.0389E-05	1.5812E-04	1.1675E-04
MINIMUM	-6.5648E-04	-2.6589E-03	5.7769E-03	-7.0389E-05	1.5812E-04	1.1675E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	3.7658E-03	-1.3919E-03	6.7272E-03	-7.0389E-05	1.5812E-04	1.1675E-04

APPALTATORE: Consorzio  Soci  	<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>				
PROGETTAZIONE: Mandataria  Mandanti  					
PROGETTO ESECUTIVO <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>					
COMMESSA <b>IF28</b>	LOTTO <b>01</b>	CODIFICA <b>E ZZ CL</b>	DOCUMENTO <b>VI0403 001</b>	REV. <b>B</b>	FOGLIO <b>320 di 354</b>

Pile N.            4            1            4            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	3417.1	-266.13	1360.1	-24.817	-3923.1	-647.16
2	3997.8	-249.89	1360.2	-24.817	-4007.6	-615.55
3	4578.5	-246.89	1421.3	-24.817	-4213.5	-609.61
4	4976.0	-259.96	1569.8	-24.817	-4595.9	-635.03
5	2428.0	-268.06	1064.7	-24.817	-3313.1	-734.54
6	3211.4	-238.94	1013.5	-24.817	-3271.5	-672.18
7	3792.0	-236.43	1060.8	-24.817	-3445.2	-666.64
8	4372.7	-266.42	1250.0	-24.817	-3931.8	-730.96
9	1261.9	-319.01	1024.1	-24.817	-3222.9	-917.63
10	2122.9	-283.59	970.52	-24.817	-3172.9	-840.28
11	2983.8	-280.77	1016.3	-24.817	-3343.3	-834.11
12	3586.3	-318.44	1207.4	-24.817	-3838.0	-916.51
13	91.065	-379.37	1020.2	-24.817	-3212.4	-1120.3
14	956.86	-337.81	967.11	-24.817	-3163.1	-1029.1
15	1817.8	-334.58	1012.9	-24.817	-3333.7	-1022.0
16	2678.8	-378.84	1203.3	-24.817	-3827.6	-1119.6
17	-987.76	-461.81	1067.3	-24.817	-3312.4	-1370.3
18	-197.64	-412.30	1013.2	-24.817	-3264.7	-1262.8
19	651.78	-408.63	1061.7	-24.817	-3441.8	-1254.9
20	1512.7	-459.39	1253.9	-24.817	-3935.3	-1365.5
MINIMUM	-987.76	-461.81	967.11	-24.817	-4595.9	-1370.3
Pile N.	17	17	14	1	4	17
MAXIMUM	4976.0	-236.43	1569.8	-24.817	-3163.1	-609.61
Pile N.	4	7	4	1	14	3

PILE GROUP	STRESS, KN/ M**2
1	1.3934E+04
2	1.4499E+04
3	1.5440E+04
4	1.6818E+04
5	1.1616E+04
6	1.1897E+04
7	1.2737E+04
8	1.4544E+04
9	1.0828E+04
10	1.1108E+04
11	1.2088E+04
12	1.3938E+04
13	1.0319E+04
14	1.0580E+04
15	1.1552E+04
16	1.3552E+04
17	1.1378E+04
18	1.0676E+04
19	1.1425E+04
20	1.3428E+04
MINIMUM	1.0319E+04
Pile N.	13
MAXIMUM	1.6818E+04
Pile N.	4

**\* 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	-1.3919E-03	-1.2808E-04	-328.49	-3923.1	-266.16	-350.60	-72.663	-89.657	1933.7	7.8279E+06	7.8279E+06
x( M)	0.0000	11.340	6.3000	0.0000	0.0000	9.1800	5.0400	11.340	18.000	0.0000	0.0000
2	-1.3919E-03	-1.3936E-04	-315.06	-4007.6	-249.91	-346.19	-66.941	-86.794	2262.3	7.8279E+06	7.8279E+06
x( M)	0.0000	11.520	6.3000	0.0000	0.0000	9.3600	5.0400	11.700	18.000	0.0000	0.0000
3	-1.3919E-03	-1.4705E-04	-312.21	-4213.5	-246.92	-359.51	-65.647	-89.389	2590.9	7.8279E+06	7.8279E+06
x( M)	0.0000	11.520	6.3000	0.0000	0.0000	9.3600	5.0400	11.700	18.000	0.0000	0.0000
4	-1.3919E-03	-1.5055E-04	-322.32	-4595.9	-260.00	-397.50	-69.524	-99.788	2815.9	7.8279E+06	7.8279E+06
x( M)	0.0000	11.340	6.3000	0.0000	0.0000	9.1800	5.0400	11.520	18.000	0.0000	0.0000
5	-1.7086E-03	-1.4336E-04	-343.98	-3313.1	-268.08	-264.55	-67.864	-62.977	1373.9	7.8279E+06	7.8279E+06
x( M)	0.0000	12.240	6.8400	0.0000	0.0000	9.9000	5.0400	12.240	18.000	0.0000	0.0000
6	-1.7086E-03	-1.5435E-04	-318.65	-3271.5	-238.97	-246.44	-58.453	-54.785	1817.3	7.8279E+06	7.8279E+06
x( M)	0.0000	12.600	7.0200	0.0000	0.0000	10.260	5.0400	12.240	18.000	0.0000	0.0000
7	-1.7086E-03	-1.6155E-04	-316.21	-3445.2	-236.46	-257.13	-57.485	-56.203	2145.9	7.8279E+06	7.8279E+06
x( M)	0.0000	12.600	7.0200	0.0000	0.0000	10.260	5.0400	12.240	18.000	0.0000	0.0000
8	-1.7086E-03	-1.6479E-04	-341.67	-3931.8	-266.45	-307.36	-66.575	-71.390	2474.4	7.8279E+06	7.8279E+06
x( M)	0.0000	12.240	6.8400	0.0000	0.0000	9.9000	5.0400	12.240	18.000	0.0000	0.0000
9	-2.0254E-03	-1.4448E-04	-399.83	-3222.9	-319.03	-252.06	-78.847	-58.801	714.11	7.8279E+06	7.8279E+06
x( M)	0.0000	12.420	7.0200	0.0000	0.0000	9.9000	5.0400	12.240	18.000	0.0000	0.0000
10	-2.0254E-03	-1.5464E-04	-369.26	-3172.9	-283.61	-233.98	-67.538	-50.104	1201.3	7.8279E+06	7.8279E+06
x( M)	0.0000	12.780	7.2000	0.0000	0.0000	10.260	5.0400	12.240	18.000	0.0000	0.0000



APPALTATORE:

Consorzio

Soci



ITINERARIO NAPOLI – BARI

RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

PROGETTAZIONE:

Mandatara

Mandanti



PROGETTO ESECUTIVO

RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 321 di 354
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11	-2.0254E-03	-1.6175E-04	-366.67	-3343.3	-280.80	-244.26	-66.505	-51.379	1688.5	7.8279E+06	7.8279E+06
x (M)	0.0000	12.780	7.2000	0.0000	0.0000	10.440	5.0400	12.240	18.000	0.0000	0.0000
12	-2.0254E-03	-1.6585E-04	-398.60	-3838.0	-318.48	-294.84	-77.912	-67.191	2029.4	7.8279E+06	7.8279E+06
x (M)	0.0000	12.420	7.0200	0.0000	0.0000	10.080	5.0400	12.240	18.000	0.0000	0.0000
13	-2.3421E-03	-1.4409E-04	-463.80	-3212.4	-379.37	-250.22	-92.723	-58.098	51.532	7.8279E+06	7.8279E+06
x (M)	0.0000	12.420	7.0200	0.0000	0.0000	10.080	5.0400	12.240	18.000	0.0000	0.0000
14	-2.3421E-03	-1.5399E-04	-428.40	-3163.1	-337.82	-232.41	-79.512	-49.445	541.47	7.8279E+06	7.8279E+06
x (M)	0.0000	12.780	7.3800	0.0000	0.0000	10.440	5.0400	12.240	18.000	0.0000	0.0000
15	-2.3421E-03	-1.6107E-04	-425.62	-3333.7	-334.60	-242.99	-78.353	-50.759	1028.7	7.8279E+06	7.8279E+06
x (M)	0.0000	12.780	7.3800	0.0000	0.0000	10.440	5.0400	12.240	18.000	0.0000	0.0000
16	-2.3421E-03	-1.6551E-04	-462.77	-3827.6	-378.88	-293.49	-91.800	-66.579	1515.9	7.8279E+06	7.8279E+06
x (M)	0.0000	12.420	7.0200	0.0000	0.0000	10.080	5.0400	12.240	18.000	0.0000	0.0000
17	-2.6589E-03	-1.4178E-04	-546.05	-3312.4	-461.80	-263.47	-113.51	-62.228	558.96	7.8279E+06	7.8279E+06
x (M)	0.0000	12.240	7.0200	0.0000	0.0000	9.9000	5.0400	12.240	18.000	0.0000	0.0000
18	-2.6589E-03	-1.5250E-04	-504.76	-3264.7	-412.30	-244.98	-97.659	-53.871	111.84	7.8279E+06	7.8279E+06
x (M)	0.0000	12.600	7.2000	0.0000	0.0000	10.260	5.0400	12.240	18.000	0.0000	0.0000
19	-2.6589E-03	-1.5976E-04	-501.53	-3441.8	-408.64	-256.20	-96.332	-55.518	368.83	7.8279E+06	7.8279E+06
x (M)	0.0000	12.600	7.2000	0.0000	0.0000	10.260	5.0400	12.240	18.000	0.0000	0.0000
20	-2.6589E-03	-1.6321E-04	-543.43	-3935.3	-459.41	-307.09	-111.90	-71.000	856.03	7.8279E+06	7.8279E+06
x (M)	0.0000	12.240	7.0200	0.0000	0.0000	9.9000	5.0400	12.240	18.000	0.0000	0.0000
Min.	-2.6589E-03	-1.6585E-04	-546.05	-4595.9	-461.80	-397.50	-113.51	-99.788	51.532	7.8279E+06	7.8279E+06
Pile N.	17	12	17	4	17	4	17	4	13	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y-DIR M	DISPL. z-DIR M	MOMENT z-DIR KN- M	MOMENT y-DIR KN- M	SHEAR y-DIR KN	SHEAR z-DIR KN	SOIL REACT y-DIR KN/ M	SOIL REACT z-DIR KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z-DIR KN- M**2	FLEX. RIG. y-DIR KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	2.7753E-05	5.7769E-03	647.16	1438.1	78.104	1360.3	19.426	358.36	1.3934E+04	7.8279E+06	7.8279E+06
x (M)	11.160	0.0000	6.0000	6.6600	9.0000	5.0400	5.0400	0.0000	0.0000	0.0000	0.0000
2	2.8502E-05	6.0937E-03	615.55	1455.8	72.945	1360.4	17.719	350.06	1.4499E+04	7.8279E+06	7.8279E+06
x (M)	11.340	0.0000	0.0000	6.8400	9.1800	0.0000	11.160	5.0400	0.0000	0.0000	0.0000
3	2.8535E-05	6.4104E-03	609.61	1519.9	71.924	1421.5	17.296	362.56	1.5440E+04	7.8279E+06	7.8279E+06
x (M)	11.340	0.0000	0.0000	6.8400	9.1800	0.0000	11.340	5.0400	0.0000	0.0000	0.0000
4	2.7820E-05	6.7272E-03	635.03	1648.2	75.711	1570.1	18.392	403.89	1.6818E+04	7.8279E+06	7.8279E+06
x (M)	11.160	0.0000	0.0000	6.6600	9.0000	0.0000	11.160	5.0400	0.0000	0.0000	0.0000
5	3.9157E-05	5.7769E-03	734.54	1210.4	73.851	1064.8	17.163	260.07	1.1616E+04	7.8279E+06	7.8279E+06
x (M)	12.060	0.0000	0.0000	7.2000	9.7200	0.0000	12.060	5.0400	0.0000	0.0000	0.0000
6	3.9942E-05	6.0937E-03	672.18	1184.5	64.995	1013.6	14.360	237.66	1.1897E+04	7.8279E+06	7.8279E+06
x (M)	12.420	0.0000	0.0000	7.3800	7.3800	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
7	3.9658E-05	6.4104E-03	666.64	1238.1	64.308	1060.9	14.004	246.84	1.2737E+04	7.8279E+06	7.8279E+06
x (M)	12.420	0.0000	0.0000	7.3800	7.3800	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
8	3.8389E-05	6.7272E-03	730.96	1406.0	73.164	1250.2	16.596	300.48	1.4544E+04	7.8279E+06	7.8279E+06
x (M)	12.060	0.0000	0.0000	7.2000	9.7200	0.0000	12.060	5.0400	0.0000	0.0000	0.0000
9	4.7781E-05	5.7769E-03	917.63	1176.3	84.626	1024.1	19.484	246.42	1.0828E+04	7.8279E+06	7.8279E+06
x (M)	12.240	0.0000	0.0000	7.2000	9.9000	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
10	4.8445E-05	6.0937E-03	840.28	1148.0	74.152	970.60	15.959	223.86	1.1108E+04	7.8279E+06	7.8279E+06
x (M)	12.600	0.0000	0.0000	7.5600	10.260	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
11	4.8060E-05	6.4104E-03	834.11	1201.2	73.446	1016.4	15.560	232.80	1.2088E+04	7.8279E+06	7.8279E+06
x (M)	12.600	0.0000	0.0000	7.5600	10.260	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
12	4.6765E-05	6.7272E-03	916.51	1371.0	84.431	1207.5	18.990	286.76	1.3938E+04	7.8279E+06	7.8279E+06
x (M)	12.240	0.0000	0.0000	7.2000	9.0000	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
13	5.5912E-05	5.7769E-03	1120.3	1171.4	98.289	1020.2	22.605	244.57	1.0319E+04	7.8279E+06	7.8279E+06
x (M)	12.240	0.0000	0.0000	7.2000	9.9000	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
14	5.6586E-05	6.0937E-03	1029.1	1143.8	86.241	967.14	18.420	222.35	1.0580E+04	7.8279E+06	7.8279E+06
x (M)	12.780	0.0000	0.0000	7.5600	10.260	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
15	5.6177E-05	6.4104E-03	1022.0	1197.2	85.415	1013.0	17.970	231.38	1.1552E+04	7.8279E+06	7.8279E+06
x (M)	12.780	0.0000	0.0000	7.5600	10.260	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
16	5.4760E-05	6.7272E-03	1119.6	1366.8	98.228	1203.5	22.091	285.14	1.3552E+04	7.8279E+06	7.8279E+06
x (M)	12.240	0.0000	0.0000	7.3800	9.9000	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
17	6.3163E-05	5.7769E-03	1370.3	1207.6	118.16	1067.3	27.722	258.92	1.1378E+04	7.8279E+06	7.8279E+06
x (M)	12.240	0.0000	0.0000	7.2000	9.7200	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
18	6.4316E-05	6.0937E-03	1262.8	1180.0	103.98	1013.2	22.864	236.10	1.0676E+04	7.8279E+06	7.8279E+06
x (M)	12.600	0.0000	0.0000	7.3800	10.000	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
19	6.3926E-05	6.4104E-03	1254.9	1235.2	102.98	1061.7	22.370	245.92	1.1425E+04	7.8279E+06	7.8279E+06
x (M)	12.600	0.0000	0.0000	7.3800	10.000	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
20	6.1992E-05	6.7272E-03	1365.5	1405.8	117.53	1253.9	26.968	300.56	1.3428E+04	7.8279E+06	7.8279E+06
x (M)	12.240	0.0000	0.0000	7.2000	9.9000	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
Max.	6.4316E-05	6.7272E-03	1370.3	1648.2	118.16	1570.1	27.722	403.89	1.6818E+04	7.8279E+06	7.8279E+06
Pile N.	18	4	17	4	17	4	17	4	4	1	1

LOAD CASE : 20  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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	0.5003	1.0000
3	0.5040	1.0000

APPALTATORE:

Consorzio

Soci



PROGETTAZIONE:

Mandataria

Mandanti



ITINERARIO NAPOLI – BARI

RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

PROGETTO ESECUTIVO

RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 322 di 354
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4	0.6166	1.0000
5	0.5400	1.0000
6	0.4615	1.0000
7	0.4648	1.0000
8	0.5741	1.0000
9	0.5399	1.0000
10	0.4615	1.0000
11	0.4647	1.0000
12	0.5741	1.0000
13	0.5717	1.0000
14	0.4920	1.0000
15	0.4951	1.0000
16	0.6040	1.0000
17	0.8435	1.0000
18	0.7844	1.0000
19	0.7867	1.0000
20	0.8661	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*

VERT. LOAD, KN 41383.0	HOR. LOAD Y, KN -6407.28	HOR. LOAD Z, KN -22721.5
MOMENT X, KN- M 15159.1	MOMENT Y, KN- M -1.06812E+05	MOMENT Z, KN- M 59335.1

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL, M 1.33213E-03	HORIZONTAL Y, M -1.98494E-03	HORIZONTAL Z, M -6.15165E-03
ANGLE ROT. X, RAD 6.74751E-05	ANGLE ROT. Y, RAD -1.48999E-04	ANGLE ROT. Z, RAD 1.06889E-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	-7.3036E-04	-2.5922E-03	-5.6962E-03	6.7475E-05	-1.4900E-04	1.0689E-04
2	-2.4936E-04	-2.5922E-03	-5.9998E-03	6.7475E-05	-1.4900E-04	1.0689E-04
3	2.3164E-04	-2.5922E-03	-6.3035E-03	6.7475E-05	-1.4900E-04	1.0689E-04
4	7.1264E-04	-2.5922E-03	-6.6071E-03	6.7475E-05	-1.4900E-04	1.0689E-04
5	-5.9869E-05	-2.2886E-03	-5.6962E-03	6.7475E-05	-1.4900E-04	1.0689E-04
6	4.2113E-04	-2.2886E-03	-5.9998E-03	6.7475E-05	-1.4900E-04	1.0689E-04
7	9.0213E-04	-2.2886E-03	-6.3035E-03	6.7475E-05	-1.4900E-04	1.0689E-04
8	1.3831E-03	-2.2886E-03	-6.6071E-03	6.7475E-05	-1.4900E-04	1.0689E-04
9	6.1063E-04	-1.9849E-03	-5.6962E-03	6.7475E-05	-1.4900E-04	1.0689E-04
10	1.0916E-03	-1.9849E-03	-5.9998E-03	6.7475E-05	-1.4900E-04	1.0689E-04
11	1.5726E-03	-1.9849E-03	-6.3035E-03	6.7475E-05	-1.4900E-04	1.0689E-04
12	2.0536E-03	-1.9849E-03	-6.6071E-03	6.7475E-05	-1.4900E-04	1.0689E-04
13	1.2811E-03	-1.6813E-03	-5.6962E-03	6.7475E-05	-1.4900E-04	1.0689E-04
14	1.7621E-03	-1.6813E-03	-5.9998E-03	6.7475E-05	-1.4900E-04	1.0689E-04
15	2.2431E-03	-1.6813E-03	-6.3035E-03	6.7475E-05	-1.4900E-04	1.0689E-04
16	2.7241E-03	-1.6813E-03	-6.6071E-03	6.7475E-05	-1.4900E-04	1.0689E-04
17	1.9516E-03	-1.3777E-03	-5.6962E-03	6.7475E-05	-1.4900E-04	1.0689E-04
18	2.4326E-03	-1.3777E-03	-5.9998E-03	6.7475E-05	-1.4900E-04	1.0689E-04
19	2.9136E-03	-1.3777E-03	-6.3035E-03	6.7475E-05	-1.4900E-04	1.0689E-04
20	3.3946E-03	-1.3777E-03	-6.6071E-03	6.7475E-05	-1.4900E-04	1.0689E-04
MINIMUM	-7.3036E-04	-2.5922E-03	-6.6071E-03	6.7475E-05	-1.4900E-04	1.0689E-04
Pile N.	1	1	4	1	1	1
MAXIMUM	3.3946E-03	-1.3777E-03	-5.6962E-03	6.7475E-05	-1.4900E-04	1.0689E-04
Pile N.	20	17	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	-1098.7	-456.36	-1060.4	23.790	3297.3	-1363.3
2	-375.89	-407.85	-1005.5	23.790	3245.0	-1257.9
3	383.14	-404.46	-1052.5	23.790	3415.6	-1250.5
4	1173.5	-454.63	-1241.4	23.790	3898.4	-1359.8
5	-90.246	-376.56	-1013.6	23.790	3197.8	-1122.0
6	695.82	-335.71	-959.75	23.790	3144.1	-1032.1
7	1484.1	-332.70	-1004.1	23.790	3308.5	-1025.5
8	2272.3	-376.60	-1191.3	23.790	3791.7	-1122.2

<b>APPALTATORE:</b> Consorzio  Soci  		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria  Mandanti  							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>							COMMESSA <b>IF28</b>

9	1006.4	-318.53	-1017.2	23.790	3207.7	-927.28
10	1794.6	-283.54	-963.00	23.790	3153.4	-850.75
11	2582.8	-280.91	-1007.3	23.790	3317.6	-844.92
12	3266.8	-318.41	-1195.0	23.790	3801.6	-927.06
13	2105.1	-269.94	-1057.5	23.790	3296.8	-752.34
14	2893.4	-240.98	-1005.5	23.790	3250.7	-690.21
15	3476.2	-238.60	-1051.2	23.790	3418.1	-684.93
16	4007.8	-268.69	-1237.0	23.790	3894.1	-749.54
17	3154.0	-270.97	-1350.1	23.790	3901.0	-674.76
18	3685.7	-254.76	-1348.7	23.790	3978.9	-643.10
19	4217.3	-251.89	-1407.7	23.790	4177.3	-637.37
20	4748.9	-265.17	-1553.0	23.790	4549.6	-663.29
MINIMUM	-1098.7	-456.36	-1553.0	23.790	3144.1	-1363.3
Pile N.	1	1	20	1	6	1
MAXIMUM	4748.9	-238.60	-959.75	23.790	4549.6	-637.37
Pile N.	20	15	6	1	20	19

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	-7.3036E-04	-2.5922E-03	-5.6962E-03	6.7475E-05	-1.4900E-04	1.0689E-04
2	-2.4936E-04	-2.5922E-03	-5.9998E-03	6.7475E-05	-1.4900E-04	1.0689E-04
3	2.3164E-04	-2.5922E-03	-6.3035E-03	6.7475E-05	-1.4900E-04	1.0689E-04
4	7.1264E-04	-2.5922E-03	-6.6071E-03	6.7475E-05	-1.4900E-04	1.0689E-04
5	-5.9869E-05	-2.2886E-03	-5.6962E-03	6.7475E-05	-1.4900E-04	1.0689E-04
6	4.2113E-04	-2.2886E-03	-5.9998E-03	6.7475E-05	-1.4900E-04	1.0689E-04
7	9.0213E-04	-2.2886E-03	-6.3035E-03	6.7475E-05	-1.4900E-04	1.0689E-04
8	1.3831E-03	-2.2886E-03	-6.6071E-03	6.7475E-05	-1.4900E-04	1.0689E-04
9	6.1063E-04	-1.9849E-03	-5.6962E-03	6.7475E-05	-1.4900E-04	1.0689E-04
10	1.0916E-03	-1.9849E-03	-5.9998E-03	6.7475E-05	-1.4900E-04	1.0689E-04
11	1.5726E-03	-1.9849E-03	-6.3035E-03	6.7475E-05	-1.4900E-04	1.0689E-04
12	2.0536E-03	-1.9849E-03	-6.6071E-03	6.7475E-05	-1.4900E-04	1.0689E-04
13	1.2811E-03	-1.6813E-03	-5.6962E-03	6.7475E-05	-1.4900E-04	1.0689E-04
14	1.7621E-03	-1.6813E-03	-5.9998E-03	6.7475E-05	-1.4900E-04	1.0689E-04
15	2.2431E-03	-1.6813E-03	-6.3035E-03	6.7475E-05	-1.4900E-04	1.0689E-04
16	2.7241E-03	-1.6813E-03	-6.6071E-03	6.7475E-05	-1.4900E-04	1.0689E-04
17	1.9516E-03	-1.3777E-03	-5.6962E-03	6.7475E-05	-1.4900E-04	1.0689E-04
18	2.4326E-03	-1.3777E-03	-5.9998E-03	6.7475E-05	-1.4900E-04	1.0689E-04
19	2.9136E-03	-1.3777E-03	-6.3035E-03	6.7475E-05	-1.4900E-04	1.0689E-04
20	3.3946E-03	-1.3777E-03	-6.6071E-03	6.7475E-05	-1.4900E-04	1.0689E-04
MINIMUM	-7.3036E-04	-2.5922E-03	-6.6071E-03	6.7475E-05	-1.4900E-04	1.0689E-04
Pile N.	1	1	4	1	1	1
MAXIMUM	3.3946E-03	-1.3777E-03	-5.6962E-03	6.7475E-05	-1.4900E-04	1.0689E-04
Pile N.	20	17	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	-1098.7	-456.36	-1060.4	23.790	3297.3	-1363.3
2	-375.89	-407.85	-1005.5	23.790	3245.0	-1257.9
3	383.14	-404.46	-1052.5	23.790	3415.6	-1250.5
4	1173.5	-454.63	-1241.4	23.790	3898.4	-1359.8
5	-90.246	-376.56	-1013.6	23.790	3197.8	-1122.0
6	695.82	-335.71	-959.75	23.790	3144.1	-1032.1
7	1484.1	-332.70	-1004.1	23.790	3308.5	-1025.5
8	2272.3	-376.60	-1191.3	23.790	3791.7	-1122.2
9	1006.4	-318.53	-1017.2	23.790	3207.7	-927.28
10	1794.6	-283.54	-963.00	23.790	3153.4	-850.75
11	2582.8	-280.91	-1007.3	23.790	3317.6	-844.92
12	3266.8	-318.41	-1195.0	23.790	3801.6	-927.06
13	2105.1	-269.94	-1057.5	23.790	3296.8	-752.34
14	2893.4	-240.98	-1005.5	23.790	3250.7	-690.21
15	3476.2	-238.60	-1051.2	23.790	3418.1	-684.93
16	4007.8	-268.69	-1237.0	23.790	3894.1	-749.54
17	3154.0	-270.97	-1350.1	23.790	3901.0	-674.76
18	3685.7	-254.76	-1348.7	23.790	3978.9	-643.10
19	4217.3	-251.89	-1407.7	23.790	4177.3	-637.37
20	4748.9	-265.17	-1553.0	23.790	4549.6	-663.29
MINIMUM	-1098.7	-456.36	-1553.0	23.790	3144.1	-1363.3
Pile N.	1	1	20	1	6	1
MAXIMUM	4748.9	-238.60	-959.75	23.790	4549.6	-637.37
Pile N.	20	15	6	1	20	19

PILE GROUP	STRESS, KN/ M**2
*****	*****
1	1.1390E+04
2	1.0716E+04
3	1.1194E+04
4	1.3125E+04

APPALTATORE:  
 Consorzio Soci

ITINERARIO NAPOLI – BARI

PROGETTAZIONE:  
 Mandataria Mandanti

RADDOPPIO TRATTA APICE – ORSARA  
 I LOTTO FUNZIONALE APICE – HIRPINIA

PROGETTO ESECUTIVO  
 RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 324 di 354
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5	1.0279E+04
6	1.0381E+04
7	1.1294E+04
8	1.3220E+04
9	1.0647E+04
10	1.0873E+04
11	1.1794E+04
12	1.3658E+04
13	1.1397E+04
14	1.1667E+04
15	1.2488E+04
16	1.4236E+04
17	1.3733E+04
18	1.4250E+04
19	1.5140E+04
20	1.6563E+04
MINIMUM	1.0279E+04
Pile N.	5
MAXIMUM	1.6563E+04
Pile N.	20


\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y- M	DISPL. z- M	MOMENT z- KN- M	MOMENT y- KN- M	SHEAR y- KN	SHEAR z- KN	SOIL REACT y- KN/ M	SOIL REACT z- KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z- KN- M**2	FLEX. RIG. y- KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	-2.5922E-03	-5.6962E-03	-534.90	-1194.8	-456.35	-1060.4	-112.12	-257.47	621.74	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	7.2000	7.2000	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
2	-2.5922E-03	-5.9998E-03	-494.52	-1165.9	-407.84	-1005.5	-96.525	-234.51	212.71	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	7.2000	7.3800	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
3	-2.5922E-03	-6.3035E-03	-491.60	-1219.0	-404.46	-1052.5	-95.261	-244.01	216.81	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	7.3800	7.3800	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
4	-2.5922E-03	-6.6071E-03	-532.67	-1385.9	-454.65	-1241.4	-110.66	-297.85	664.08	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	7.0200	7.2000	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
5	-2.2886E-03	-5.6962E-03	-455.39	-1158.8	-376.56	-1013.6	-91.921	-243.16	51.069	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	7.0200	7.2000	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
6	-2.2886E-03	-5.9998E-03	-420.86	-1130.0	-335.71	-959.77	-78.883	-220.82	393.75	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	7.3800	7.5600	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
7	-2.2886E-03	-6.3035E-03	-418.21	-1181.4	-332.72	-1004.2	-77.777	-229.55	839.80	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	7.3800	7.5600	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
8	-2.2886E-03	-6.6071E-03	-454.68	-1347.2	-376.63	-1191.4	-91.131	-282.54	1285.9	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	7.0200	7.3800	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
9	-1.9849E-03	-5.6962E-03	-393.92	-1163.4	-318.54	-1017.2	-78.558	-244.94	569.48	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	7.0200	7.2000	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
10	-1.9849E-03	-5.9998E-03	-363.82	-1134.0	-283.56	-963.07	-67.346	-222.28	1015.5	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	7.2000	7.5600	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
11	-1.9849E-03	-6.3035E-03	-361.34	-1185.2	-280.93	-1007.4	-66.356	-230.92	1461.6	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	7.2000	7.5600	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
12	-1.9849E-03	-6.6071E-03	-393.01	-1351.4	-318.45	-1195.1	-77.741	-284.10	1848.6	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	7.0200	7.0200	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
13	-1.6813E-03	-5.6962E-03	-340.39	-1197.1	-269.95	-1057.5	-68.115	-258.47	1191.3	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	6.8400	7.2000	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
14	-1.6813E-03	-5.9998E-03	-315.34	-1170.0	-241.01	-1005.6	-58.722	-235.95	1637.3	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	7.0200	7.3800	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
15	-1.6813E-03	-6.3035E-03	-312.99	-1221.7	-238.63	-1051.3	-57.786	-244.83	1967.1	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	7.0200	7.3800	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
16	-1.6813E-03	-6.6071E-03	-338.36	-1385.9	-268.73	-1237.2	-66.927	-297.68	2268.0	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	6.8400	7.2000	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
17	-1.3777E-03	-5.6962E-03	-327.29	-1422.5	-271.00	-1350.2	-73.750	-356.09	1784.8	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	6.3000	6.6600	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
18	-1.3777E-03	-5.9998E-03	-313.88	-1438.2	-254.79	-1348.8	-68.003	-347.49	2085.7	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	6.4800	6.8400	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
19	-1.3777E-03	-6.3035E-03	-311.23	-1499.9	-251.92	-1407.9	-66.733	-359.56	2386.5	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	6.4800	6.8400	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
20	-1.3777E-03	-6.6071E-03	-321.32	-1624.9	-265.21	-1553.2	-70.692	-400.14	2687.3	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	6.3000	6.6600	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
Min.	-2.5922E-03	-6.6071E-03	-534.90	-1624.9	-456.35	-1553.2	-112.12	-400.14	51.069	7.8279E+06	7.8279E+06
Pile N.	1	4	1	20	1	20	1	20	5	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

PILE	DISPL. y- M	DISPL. z- M	MOMENT z- KN- M	MOMENT y- KN- M	SHEAR y- KN	SHEAR z- KN	SOIL REACT y- KN/ M	SOIL REACT z- KN/ M	TOTAL STRESS KN/ M**2	FLEX. RIG. z- KN- M**2	FLEX. RIG. y- KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	6.1844E-05	1.4000E-04	1363.3	3297.3	115.99	261.06	27.344	61.900	1.1390E+04	7.8279E+06	7.8279E+06
x (M)	12.240	12.240	0.0000	0.0000	9.7200	9.9000	12.240	12.240	0.0000	0.0000	0.0000
2	6.3025E-05	1.5048E-04	1257.9	3245.0	102.11	242.39	22.569	53.582	1.0716E+04	7.8279E+06	7.8279E+06
x (M)	12.600	12.600	0.0000	0.0000	10.080	10.260	12.240	12.240	0.0000	0.0000	0.0000
3	6.2653E-05	1.5745E-04	1250.5	3415.6	101.16	253.20	22.097	55.186	1.1194E+04	7.8279E+06	7.8279E+06
x (M)	12.600	12.600	0.0000	0.0000	10.080	10.260	12.240	12.240	0.0000	0.0000	0.0000
4	6.0729E-05	1.6054E-04	1359.8	3898.4	115.52	303.28	26.652	70.457	1.3125E+04	7.8279E+06	7.8279E+06
x (M)	12.240	12.240	0.0000	0.0000	9.9000	9.9000	12.240	12.240	0.0000	0.0000	0.0000

<b>APPALTATORE:</b> Consorzio  Soci  	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>				
<b>PROGETTAZIONE:</b> Mandataria  Mandanti  					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>					
<b>COMMESSA</b> <b>IF28</b>	<b>LOTTO</b> <b>01</b>	<b>CODIFICA</b> <b>E ZZ CL</b>	<b>DOCUMENTO</b> <b>VI0403 001</b>	<b>REV.</b> <b>B</b>	<b>FOGLIO</b> <b>325 di 354</b>

5	5.4916E-05	1.4230E-04	1122.0	3197.8	96.752	247.86	22.358	57.785	1.0279E+04	7.8279E+06	7.8279E+06
x( M)	12.240	12.420	0.0000	0.0000	9.9000	10.080	12.240	12.240	0.0000	0.0000	0.0000
6	5.5628E-05	1.5198E-04	1032.1	3144.1	84.928	229.92	18.225	49.180	1.0381E+04	7.8279E+06	7.8279E+06
x( M)	12.780	12.780	0.0000	0.0000	10.260	10.260	12.240	12.240	0.0000	0.0000	0.0000
7	5.5240E-05	1.5879E-04	1025.5	3308.5	84.137	240.08	17.794	50.464	1.1294E+04	7.8279E+06	7.8279E+06
x( M)	12.780	12.780	0.0000	0.0000	10.260	10.440	12.240	12.240	0.0000	0.0000	0.0000
8	5.3811E-05	1.6280E-04	1122.2	3791.7	96.782	289.66	21.893	66.063	1.3220E+04	7.8279E+06	7.8279E+06
x( M)	12.240	12.420	0.0000	0.0000	9.9000	10.080	12.240	12.240	0.0000	0.0000	0.0000
9	4.7123E-05	1.4266E-04	927.28	3207.7	83.613	249.65	19.346	58.458	1.0647E+04	7.8279E+06	7.8279E+06
x( M)	12.240	12.420	0.0000	0.0000	9.9000	9.9000	12.240	12.240	0.0000	0.0000	0.0000
10	4.7803E-05	1.5259E-04	850.75	3153.4	73.302	231.46	15.844	49.813	1.0873E+04	7.8279E+06	7.8279E+06
x( M)	12.600	12.780	0.0000	0.0000	10.260	10.260	12.240	12.240	0.0000	0.0000	0.0000
11	4.7432E-05	1.5942E-04	844.92	3317.6	72.619	241.29	15.460	51.062	1.1794E+04	7.8279E+06	7.8279E+06
x( M)	12.600	12.780	0.0000	0.0000	10.260	10.440	12.240	12.240	0.0000	0.0000	0.0000
12	4.6152E-05	1.6314E-04	927.06	3801.6	83.513	291.00	18.896	66.661	1.3658E+04	7.8279E+06	7.8279E+06
x( M)	12.240	12.420	0.0000	0.0000	9.9000	10.080	12.240	12.240	0.0000	0.0000	0.0000
13	3.8833E-05	1.4151E-04	752.34	3296.8	73.330	261.97	17.135	62.580	1.1397E+04	7.8279E+06	7.8279E+06
x( M)	12.060	12.240	0.0000	0.0000	9.7200	9.9000	12.060	12.240	0.0000	0.0000	0.0000
14	3.9635E-05	1.5225E-04	690.21	3250.7	64.585	243.73	14.340	54.438	1.1667E+04	7.8279E+06	7.8279E+06
x( M)	12.420	12.600	0.0000	0.0000	10.080	10.260	12.240	12.240	0.0000	0.0000	0.0000
15	3.9363E-05	1.5919E-04	684.93	3418.1	63.914	254.05	13.996	55.827	1.2488E+04	7.8279E+06	7.8279E+06
x( M)	12.420	12.600	0.0000	0.0000	10.080	10.260	12.240	12.240	0.0000	0.0000	0.0000
16	3.8099E-05	1.6209E-04	749.54	3894.1	72.736	303.47	16.608	70.808	1.4236E+04	7.8279E+06	7.8279E+06
x( M)	12.060	12.240	0.0000	0.0000	9.7200	9.9000	12.060	12.240	0.0000	0.0000	0.0000
17	2.7733E-05	1.2626E-04	674.76	3901.0	78.162	347.28	19.531	89.029	1.3733E+04	7.8279E+06	7.8279E+06
x( M)	11.160	11.340	0.0000	0.0000	9.0000	9.1800	10.980	11.340	0.0000	0.0000	0.0000
18	2.8491E-05	1.3721E-04	643.10	3978.9	73.048	342.55	17.839	86.134	1.4250E+04	7.8279E+06	7.8279E+06
x( M)	11.340	11.520	0.0000	0.0000	9.1800	9.3600	11.340	11.700	0.0000	0.0000	0.0000
19	2.8519E-05	1.4459E-04	637.37	4177.3	72.034	355.40	17.436	88.652	1.5140E+04	7.8279E+06	7.8279E+06
x( M)	11.340	11.520	0.0000	0.0000	9.1800	9.3600	11.340	11.700	0.0000	0.0000	0.0000
20	2.7795E-05	1.4781E-04	663.29	4549.6	75.825	392.67	18.546	98.870	1.6563E+04	7.8279E+06	7.8279E+06
x( M)	11.160	11.340	0.0000	0.0000	9.1800	9.1800	11.160	11.520	0.0000	0.0000	0.0000
Max.	6.3025E-05	1.6314E-04	1363.3	4549.6	115.99	392.67	27.344	98.870	1.6563E+04	7.8279E+06	7.8279E+06
Pile N.	2	12	1	20	1	20	1	20	20	1	1

LOAD CASE : 21  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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	0.5791	1.0000
3	0.5445	1.0000
4	0.5846	1.0000
5	0.8053	1.0000
6	0.4951	1.0000
7	0.4615	1.0000
8	0.4955	1.0000
9	0.8053	1.0000
10	0.4940	1.0000
11	0.4606	1.0000
12	0.4945	1.0000
13	0.8053	1.0000
14	0.4951	1.0000
15	0.4615	1.0000
16	0.4955	1.0000
17	0.8660	1.0000
18	0.5791	1.0000
19	0.5445	1.0000
20	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
41435.8	13169.1	98.3994
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-358.579	1244.66	-19231.9

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
1.26078E-03	3.04631E-03	2.53758E-05

APPALTATORE:

Consorzio

Soci



PROGETTAZIONE:

Mandataria

Mandanti



PROGETTO ESECUTIVO

RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

ITINERARIO NAPOLI – BARI

RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 326 di 354
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ANGLE ROT. X,RAD      ANGLE ROT. Y,RAD      ANGLE ROT. Z,RAD  
-1.34953E-06          1.15257E-06          -7.13303E-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	1.7526E-03	3.0585E-03	1.6266E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
2	1.4317E-03	3.0585E-03	2.2339E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
3	1.1107E-03	3.0585E-03	2.8412E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
4	7.8967E-04	3.0585E-03	3.4485E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
5	1.7474E-03	3.0524E-03	1.6266E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
6	1.4265E-03	3.0524E-03	2.2339E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
7	1.1055E-03	3.0524E-03	2.8412E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
8	7.8449E-04	3.0524E-03	3.4485E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
9	1.7423E-03	3.0463E-03	1.6266E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
10	1.4213E-03	3.0463E-03	2.2339E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
11	1.1003E-03	3.0463E-03	2.8412E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
12	7.7930E-04	3.0463E-03	3.4485E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
13	1.7371E-03	3.0402E-03	1.6266E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
14	1.4161E-03	3.0402E-03	2.2339E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
15	1.0951E-03	3.0402E-03	2.8412E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
16	7.7411E-04	3.0402E-03	3.4485E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
17	1.7319E-03	3.0342E-03	1.6266E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
18	1.4109E-03	3.0342E-03	2.2339E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
19	1.0899E-03	3.0342E-03	2.8412E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
20	7.6893E-04	3.0342E-03	3.4485E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
MINIMUM	7.6893E-04	3.0342E-03	1.6266E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
Pile N.	20	17	1	1	1	1
MAXIMUM	1.7526E-03	3.0585E-03	3.4485E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
Pile N.	1	1	4	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	2877.8	826.77	3.7350	-0.4758	-9.3413	2335.3
2	2351.8	654.17	4.3114	-0.4758	-12.240	1995.9
3	1825.8	631.22	5.5099	-0.4758	-16.303	1948.1
4	1299.8	658.15	7.1626	-0.4758	-21.296	2003.3
5	2869.3	791.01	3.5711	-0.4758	-9.0375	2265.6
6	2343.3	595.80	3.9206	-0.4758	-11.436	1872.7
7	1817.3	572.00	4.9922	-0.4758	-15.218	1821.4
8	1291.3	596.48	6.4969	-0.4758	-19.916	1873.3
9	2860.8	789.51	3.5720	-0.4758	-9.0396	2261.0
10	2334.8	593.95	3.9167	-0.4758	-11.428	1867.3
11	1808.8	570.23	4.9873	-0.4758	-15.208	1816.2
12	1282.8	594.62	6.4906	-0.4758	-19.903	1867.9
13	2852.3	788.02	3.5729	-0.4758	-9.0417	2256.4
14	2326.3	593.57	3.9229	-0.4758	-11.442	1865.1
15	1800.3	569.87	4.9952	-0.4758	-15.225	1814.0
16	1274.3	594.25	6.5007	-0.4758	-19.926	1865.7
17	2843.8	820.50	3.7387	-0.4758	-9.3497	2316.3
18	2317.8	649.25	4.3162	-0.4758	-12.251	1979.7
19	1791.8	626.48	5.5161	-0.4758	-16.318	1932.3
20	1265.8	653.21	7.1704	-0.4758	-21.315	1987.1
MINIMUM	1265.8	569.87	3.5711	-0.4758	-21.315	1814.0
Pile N.	20	15	5	1	20	15
MAXIMUM	2877.8	826.77	7.1704	-0.4758	-9.0375	2335.3
Pile N.	1	1	20	1	5	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	1.7526E-03	3.0585E-03	1.6266E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
2	1.4317E-03	3.0585E-03	2.2339E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
3	1.1107E-03	3.0585E-03	2.8412E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
4	7.8967E-04	3.0585E-03	3.4485E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
5	1.7474E-03	3.0524E-03	1.6266E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
6	1.4265E-03	3.0524E-03	2.2339E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
7	1.1055E-03	3.0524E-03	2.8412E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
8	7.8449E-04	3.0524E-03	3.4485E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
9	1.7423E-03	3.0463E-03	1.6266E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
10	1.4213E-03	3.0463E-03	2.2339E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
11	1.1003E-03	3.0463E-03	2.8412E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
12	7.7930E-04	3.0463E-03	3.4485E-05	-1.3495E-06	1.1526E-06	-7.1330E-05

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>				
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>					
<b>COMMESSA</b> <b>IF28</b>	<b>LOTTO</b> <b>01</b>	<b>CODIFICA</b> <b>E ZZ CL</b>	<b>DOCUMENTO</b> <b>VI0403 001</b>	<b>REV.</b> <b>B</b>	<b>FOGLIO</b> <b>327 di 354</b>

13	1.7371E-03	3.0402E-03	1.6266E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
14	1.4161E-03	3.0402E-03	2.2339E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
15	1.0951E-03	3.0402E-03	2.8412E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
16	7.7411E-04	3.0402E-03	3.4485E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
17	1.7319E-03	3.0342E-03	1.6266E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
18	1.4109E-03	3.0342E-03	2.2339E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
19	1.0899E-03	3.0342E-03	2.8412E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
20	7.6893E-04	3.0342E-03	3.4485E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
MINIMUM	7.6893E-04	3.0342E-03	1.6266E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
Pile N.	20	17	1	1	1	1
MAXIMUM	1.7526E-03	3.0585E-03	3.4485E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
Pile N.	1	1	4	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	2877.8	826.77	3.7350	-0.4758	-9.3413	2335.3
2	2351.8	654.17	4.3114	-0.4758	-12.240	1995.9
3	1825.8	631.22	5.5099	-0.4758	-16.303	1948.1
4	1299.8	658.15	7.1626	-0.4758	-21.296	2003.3
5	2869.3	791.01	3.5711	-0.4758	-9.0375	2265.6
6	2343.3	595.80	3.9206	-0.4758	-11.436	1872.7
7	1817.3	572.00	4.9922	-0.4758	-15.218	1821.4
8	1291.3	596.48	6.4969	-0.4758	-19.916	1873.3
9	2860.8	789.51	3.5720	-0.4758	-9.0396	2261.0
10	2334.8	593.95	3.9167	-0.4758	-11.428	1867.3
11	1808.8	570.23	4.9873	-0.4758	-15.208	1816.2
12	1282.8	594.62	6.4906	-0.4758	-19.903	1867.9
13	2852.3	788.02	3.5729	-0.4758	-9.0417	2256.4
14	2326.3	593.57	3.9229	-0.4758	-11.442	1865.1
15	1800.3	569.87	4.9952	-0.4758	-15.225	1814.0
16	1274.3	594.25	6.5007	-0.4758	-19.926	1865.7
17	2843.8	820.50	3.7387	-0.4758	-9.3497	2316.3
18	2317.8	649.25	4.3162	-0.4758	-12.251	1979.7
19	1791.8	626.48	5.5161	-0.4758	-16.318	1932.3
20	1265.8	653.21	7.1704	-0.4758	-21.315	1987.1
MINIMUM	1265.8	569.87	3.5711	-0.4758	-21.315	1814.0
Pile N.	20	15	5	1	20	15
MAXIMUM	2877.8	826.77	7.1704	-0.4758	-9.0375	2335.3
Pile N.	1	1	20	1	5	1

PILE GROUP	STRESS, KN/ M**2
*****	*****
1	8676.5
2	7354.8
3	6912.8
4	6782.0
5	8461.5
6	6977.9
7	6525.7
8	6384.8
9	8442.8
10	6956.9
11	6505.1
12	6363.8
13	8424.1
14	6945.4
15	6493.7
16	6352.2
17	8600.0
18	7286.7
19	6845.9
20	6713.7
MINIMUM	6352.2
Pile N.	16
MAXIMUM	8676.5
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
	M	M	KN- M	KN- M	KN	KN	KN/ M	KN/ M	KN/ M**2	KN- M**2	KN- M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	-6.2104E-05	-3.0637E-07	-2335.3	-9.3413	-232.31	-1.1528	-65.875	-0.3222	1628.5	7.8279E+06	7.8279E+06
x( M)	10.620	10.440	0.0000	0.0000	8.6400	8.4600	10.800	10.440	18.000	0.0000	0.0000
2	-7.5515E-05	-5.2264E-07	-1995.9	-12.240	-179.76	-1.2621	-50.359	-0.3460	1330.8	7.8279E+06	7.8279E+06
x( M)	11.520	11.520	0.0000	0.0000	9.3600	9.1800	11.880	11.700	18.000	0.0000	0.0000
3	-7.7737E-05	-6.9842E-07	-1948.1	-16.303	-172.57	-1.5629	-48.159	-0.4308	1033.2	7.8279E+06	7.8279E+06
x( M)	11.700	11.700	0.0000	0.0000	9.3600	9.3600	12.060	12.060	18.000	0.0000	0.0000
4	-7.5106E-05	-8.3087E-07	-2003.3	-21.296	-180.75	-2.0097	-50.672	-0.5591	735.52	7.8279E+06	7.8279E+06
x( M)	11.520	11.520	0.0000	0.0000	9.1800	9.1800	11.880	11.880	18.000	0.0000	0.0000







<b>APPALTATORE:</b>				<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<u>Consorzio</u>		<u>Soci</u>							
									
<b>PROGETTAZIONE:</b>									
<u>Mandatario</u>		<u>Mandanti</u>							
									
<b>PROGETTO ESECUTIVO</b>				COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO
<b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>				IF28	01	E ZZ CL	VI0403 001	B	328 di 354

5	-6.4049E-05	-3.1566E-07	-2265.6	-9.0375	-221.95	-1.1046	-62.660	-0.3058	1623.7	7.8279E+06	7.8279E+06
x (M)	10.800	10.620	0.0000	0.0000	8.8200	8.6400	10.980	10.800	18.000	0.0000	0.0000
6	-8.1074E-05	-5.6149E-07	-1872.7	-11.436	-161.56	-1.1357	-44.795	-0.3081	1326.0	7.8279E+06	7.8279E+06
x (M)	11.880	11.880	0.0000	0.0000	9.5400	9.3600	12.240	12.060	18.000	0.0000	0.0000
7	-8.3497E-05	-7.5148E-07	-1821.4	-15.218	-153.69	-1.3968	-42.248	-0.3794	1028.4	7.8279E+06	7.8279E+06
x (M)	12.060	12.060	0.0000	0.0000	9.5400	9.5400	12.240	12.240	18.000	0.0000	0.0000
8	-8.0961E-05	-8.9718E-07	-1873.3	-19.916	-161.50	-1.7972	-44.797	-0.4952	730.71	7.8279E+06	7.8279E+06
x (M)	11.880	11.880	0.0000	0.0000	9.5400	9.5400	12.240	12.240	18.000	0.0000	0.0000
9	-6.3893E-05	-3.1556E-07	-2261.0	-9.0396	-221.60	-1.1051	-62.578	-0.3060	1618.9	7.8279E+06	7.8279E+06
x (M)	10.800	10.620	0.0000	0.0000	8.8200	8.6400	10.980	10.800	18.000	0.0000	0.0000
10	-8.0962E-05	-5.6193E-07	-1867.3	-11.428	-161.08	-1.1347	-44.667	-0.3079	1321.2	7.8279E+06	7.8279E+06
x (M)	11.880	11.880	0.0000	0.0000	9.5400	9.3600	12.240	12.060	18.000	0.0000	0.0000
11	-8.3381E-05	-7.5203E-07	-1816.2	-15.208	-153.22	-1.3955	-42.123	-0.3791	1023.6	7.8279E+06	7.8279E+06
x (M)	12.060	12.060	0.0000	0.0000	9.5400	9.5400	12.240	12.240	18.000	0.0000	0.0000
12	-8.0849E-05	-8.9783E-07	-1867.9	-19.903	-161.03	-1.7956	-44.669	-0.4948	725.90	7.8279E+06	7.8279E+06
x (M)	11.880	11.880	0.0000	0.0000	9.5400	9.5400	12.240	12.240	18.000	0.0000	0.0000
13	-6.3737E-05	-3.1546E-07	-2256.4	-9.0417	-221.25	-1.1057	-62.497	-0.3063	1614.1	7.8279E+06	7.8279E+06
x (M)	10.800	10.620	0.0000	0.0000	8.8200	8.6400	10.980	10.800	18.000	0.0000	0.0000
14	-8.0706E-05	-5.6125E-07	-1865.1	-11.442	-161.07	-1.1371	-44.690	-0.3087	1316.4	7.8279E+06	7.8279E+06
x (M)	11.880	11.880	0.0000	0.0000	9.5400	9.3600	12.240	12.060	18.000	0.0000	0.0000
15	-8.3120E-05	-7.5119E-07	-1814.0	-15.225	-153.24	-1.3984	-42.153	-0.3801	1018.8	7.8279E+06	7.8279E+06
x (M)	12.060	12.060	0.0000	0.0000	9.5400	9.5400	12.240	12.240	18.000	0.0000	0.0000
16	-8.0594E-05	-8.9682E-07	-1865.7	-19.926	-161.02	-1.7992	-44.692	-0.4961	721.09	7.8279E+06	7.8279E+06
x (M)	11.880	11.880	0.0000	0.0000	9.5400	9.5400	12.240	12.240	18.000	0.0000	0.0000
17	-6.1513E-05	-3.0605E-07	-2316.3	-9.3497	-230.89	-1.1553	-65.540	-0.3234	1609.3	7.8279E+06	7.8279E+06
x (M)	10.620	10.440	0.0000	0.0000	8.6400	8.4600	10.800	10.440	18.000	0.0000	0.0000
18	-7.4805E-05	-5.2200E-07	-1979.7	-12.251	-178.67	-1.2648	-50.104	-0.3472	1311.6	7.8279E+06	7.8279E+06
x (M)	11.520	11.520	0.0000	0.0000	9.1800	9.1800	11.880	11.700	18.000	0.0000	0.0000
19	-7.7010E-05	-6.9764E-07	-1932.3	-16.318	-171.53	-1.5662	-47.919	-0.4322	1013.9	7.8279E+06	7.8279E+06
x (M)	11.700	11.700	0.0000	0.0000	9.3600	9.3600	12.060	12.060	18.000	0.0000	0.0000
20	-7.4393E-05	-8.2983E-07	-1987.1	-21.315	-179.67	-2.0141	-50.412	-0.5609	716.28	7.8279E+06	7.8279E+06
x (M)	11.520	11.520	0.0000	0.0000	9.1800	9.1800	11.880	11.880	18.000	0.0000	0.0000
Min.	-8.3497E-05	-8.9783E-07	-2335.3	-21.315	-232.31	-2.0141	-65.875	-0.5609	716.28	7.8279E+06	7.8279E+06
Pile N.	7	12	1	20	1	20	1	20	20	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	3.0585E-03	1.6266E-05	881.46	4.4481	826.84	3.7353	259.49	1.2023	8676.5	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	6.4800	0.0000	0.0000	0.0000	5.0400	5.0400	0.0000	0.0000	0.0000
2	3.0585E-03	2.2339E-05	750.64	5.3069	654.22	4.3117	189.48	1.2756	7354.8	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	6.8400	0.0000	0.0000	0.0000	5.0400	5.0400	0.0000	0.0000	0.0000
3	3.0585E-03	2.8412E-05	731.63	6.6595	631.26	5.5103	180.37	1.5953	6912.8	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	6.8400	0.0000	0.0000	0.0000	5.0400	5.0400	0.0000	0.0000	0.0000
4	3.0585E-03	3.4485E-05	753.28	8.3870	658.18	7.1629	209.92	2.0926	6782.0	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	6.8400	0.0000	0.0000	0.0000	5.0400	5.0400	0.0000	0.0000	0.0000
5	3.0524E-03	1.6266E-05	855.85	4.3224	791.09	3.5714	245.11	1.1374	8461.5	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	6.4800	6.3000	0.0000	0.0000	5.0400	5.0400	0.0000	0.0000	0.0000
6	3.0524E-03	2.2339E-05	702.62	4.9768	595.85	3.9209	166.83	1.1246	6977.9	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	7.0200	0.0000	0.0000	0.0000	5.0400	5.0400	0.0000	0.0000	0.0000
7	3.0524E-03	2.8412E-05	682.17	6.2224	572.04	4.9925	157.57	1.3959	6525.7	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	7.0200	0.0000	0.0000	0.0000	5.0400	5.0400	0.0000	0.0000	0.0000
8	3.0524E-03	3.4485E-05	702.65	7.8393	596.50	6.4972	166.96	1.8332	6384.8	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	7.0200	7.0200	0.0000	0.0000	5.0400	5.0400	0.0000	0.0000	0.0000
9	3.0463E-03	1.6266E-05	854.41	4.3239	789.59	3.5723	244.81	1.1385	8442.8	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	6.4800	6.3000	0.0000	0.0000	5.0400	5.0400	0.0000	0.0000	0.0000
10	3.0463E-03	2.2339E-05	700.83	4.9743	594.00	3.9170	166.34	1.1237	6956.9	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	7.0200	6.8400	0.0000	0.0000	5.0400	5.0400	0.0000	0.0000	0.0000
11	3.0463E-03	2.8412E-05	680.43	6.2193	570.27	4.9877	157.11	1.3948	6505.1	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	7.0200	7.0200	0.0000	0.0000	5.0400	5.0400	0.0000	0.0000	0.0000
12	3.0463E-03	3.4485E-05	700.87	7.8355	594.65	6.4909	166.47	1.8317	6363.8	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	7.0200	7.0200	0.0000	0.0000	5.0400	5.0400	0.0000	0.0000	0.0000
13	3.0402E-03	1.6266E-05	852.96	4.3254	788.09	3.5732	244.51	1.1395	8424.1	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	6.4800	6.3000	0.0000	0.0000	5.0400	5.0400	0.0000	0.0000	0.0000
14	3.0402E-03	2.2339E-05	700.27	4.9806	593.62	3.9232	166.42	1.1267	6945.4	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	7.0200	6.8400	0.0000	0.0000	5.0400	5.0400	0.0000	0.0000	0.0000
15	3.0402E-03	2.8412E-05	679.91	6.2270	569.91	4.9955	157.19	1.3985	6493.7	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	7.0200	7.0200	0.0000	0.0000	5.0400	5.0400	0.0000	0.0000	0.0000
16	3.0402E-03	3.4485E-05	700.30	7.8451	594.27	6.5010	166.55	1.8366	6352.2	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	7.0200	7.0200	0.0000	0.0000	5.0400	5.0400	0.0000	0.0000	0.0000
17	3.0342E-03	1.6266E-05	875.57	4.4544	820.58	3.7390	258.21	1.2066	8600.0	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	6.3000	6.1200	0.0000	0.0000	5.0400	5.0400	0.0000	0.0000	0.0000
18	3.0342E-03	2.2339E-05	745.61	5.3147	649.30	4.3165	188.55	1.2802	7286.7	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	6.8400	6.6600	0.0000	0.0000	5.0400	5.0400	0.0000	0.0000	0.0000
19	3.0342E-03	2.8412E-05	726.76	6.6692	626.52	5.5164	179.48	1.6010	6845.9	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	6.8400	6.8400	0.0000	0.0000	5.0400	5.0400	0.0000	0.0000	0.0000
20	3.0342E-03	3.4485E-05	748.21	8.3992	653.23	7.1707	189.99	2.1001	6713.7	7.8279E+06	7.8279E+06
x (M)	0.0000	0.0000	6.8400	6.6600	0.0000	0.0000	5.0400	5.0400	0.0000	0.0000	0.0000
Max.	3.0585E-03	3.4485E-05	881.46	8.3992	826.84	7.1707	259.49	2.1001	8676.5	7.8279E+06	7.8279E+06
Pile N.	1	4	1	20	1	20	1	20	1	1	1



<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>				
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>					
<b>COMMESSA</b> <b>IF28</b>	<b>LOTTO</b> <b>01</b>	<b>CODIFICA</b> <b>E ZZ CL</b>	<b>DOCUMENTO</b> <b>VI0403 001</b>	<b>REV.</b> <b>B</b>	<b>FOGLIO</b> <b>329 di 354</b>

LOAD CASE : 22  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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	0.5445	1.0000
3	0.5791	1.0000
4	0.8661	1.0000
5	0.4955	1.0000
6	0.4615	1.0000
7	0.4951	1.0000
8	0.8053	1.0000
9	0.4945	1.0000
10	0.4606	1.0000
11	0.4941	1.0000
12	0.8053	1.0000
13	0.4955	1.0000
14	0.4615	1.0000
15	0.4951	1.0000
16	0.8053	1.0000
17	0.5845	1.0000
18	0.5445	1.0000
19	0.5791	1.0000
20	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
47252.1	-36126.8	98.3994
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
-297.079	1254.67	1.96350E+05

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
2.10568E-03	-0.0133191	3.61552E-05
ANGLE ROT. X, RAD	ANGLE ROT. Y, RAD	ANGLE ROT. Z, RAD
-1.42109E-06	1.67144E-06	5.50991E-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	-1.5985E-03	-0.013306	2.6563E-05	-1.4211E-06	1.6714E-06	5.5099E-04
2	8.8099E-04	-0.013306	3.2958E-05	-1.4211E-06	1.6714E-06	5.5099E-04
3	3.3605E-03	-0.013306	3.9353E-05	-1.4211E-06	1.6714E-06	5.5099E-04
4	5.8399E-03	-0.013306	4.5748E-05	-1.4211E-06	1.6714E-06	5.5099E-04
5	-1.6060E-03	-0.013313	2.6563E-05	-1.4211E-06	1.6714E-06	5.5099E-04
6	8.7347E-04	-0.013313	3.2958E-05	-1.4211E-06	1.6714E-06	5.5099E-04
7	3.3529E-03	-0.013313	3.9353E-05	-1.4211E-06	1.6714E-06	5.5099E-04
8	5.8324E-03	-0.013313	4.5748E-05	-1.4211E-06	1.6714E-06	5.5099E-04
9	-1.6135E-03	-0.013319	2.6563E-05	-1.4211E-06	1.6714E-06	5.5099E-04
10	8.6595E-04	-0.013319	3.2958E-05	-1.4211E-06	1.6714E-06	5.5099E-04
11	3.3454E-03	-0.013319	3.9353E-05	-1.4211E-06	1.6714E-06	5.5099E-04
12	5.8249E-03	-0.013319	4.5748E-05	-1.4211E-06	1.6714E-06	5.5099E-04
13	-1.6210E-03	-0.013326	2.6563E-05	-1.4211E-06	1.6714E-06	5.5099E-04
14	8.5843E-04	-0.013326	3.2958E-05	-1.4211E-06	1.6714E-06	5.5099E-04
15	3.3379E-03	-0.013326	3.9353E-05	-1.4211E-06	1.6714E-06	5.5099E-04
16	5.8173E-03	-0.013326	4.5748E-05	-1.4211E-06	1.6714E-06	5.5099E-04
17	-1.6286E-03	-0.013332	2.6563E-05	-1.4211E-06	1.6714E-06	5.5099E-04
18	8.5091E-04	-0.013332	3.2958E-05	-1.4211E-06	1.6714E-06	5.5099E-04
19	3.3304E-03	-0.013332	3.9353E-05	-1.4211E-06	1.6714E-06	5.5099E-04
20	5.8098E-03	-0.013332	4.5748E-05	-1.4211E-06	1.6714E-06	5.5099E-04
MINIMUM	-1.6286E-03	-0.013332	2.6563E-05	-1.4211E-06	1.6714E-06	5.5099E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	5.8399E-03	-0.013306	4.5748E-05	-1.4211E-06	1.6714E-06	5.5099E-04
Pile N.	4	1	4	1	1	1

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   		<b>ITINERARIO NAPOLI – BARI</b>					
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   		<b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>		<b>COMMESSA</b> <b>IF28</b>	<b>LOTTO</b> <b>01</b>	<b>CODIFICA</b> <b>E ZZ CL</b>	<b>DOCUMENTO</b> <b>VI0403 001</b>	<b>REV.</b> <b>B</b>	<b>FOGLIO</b> <b>330 di</b> <b>354</b>

\* 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	-2402.2	-1799.9	3.2668	-0.5010	-9.7367	-5806.9
2	1449.4	-1712.8	4.0725	-0.5010	-12.929	-5615.4
3	4711.2	-1779.4	5.2385	-0.5010	-16.971	-5784.2
4	5761.6	-2316.5	8.1137	-0.5010	-24.827	-6993.6
5	-2413.5	-1615.3	2.9181	-0.5010	-8.9178	-5368.7
6	1437.1	-1536.7	3.6452	-0.5010	-11.901	-5190.3
7	4702.9	-1605.3	4.7224	-0.5010	-15.740	-5369.9
8	5758.8	-2209.2	7.7360	-0.5010	-24.005	-6762.2
9	-2424.8	-1613.6	2.9132	-0.5010	-8.9060	-5365.8
10	1424.8	-1535.0	3.6391	-0.5010	-11.886	-5187.5
11	4694.5	-1603.6	4.7147	-0.5010	-15.721	-5366.9
12	5755.9	-2209.9	7.7342	-0.5010	-24.002	-6765.3
13	-2436.1	-1616.4	2.9167	-0.5010	-8.9144	-5373.8
14	1412.4	-1537.7	3.6435	-0.5010	-11.897	-5195.2
15	4686.2	-1606.3	4.7202	-0.5010	-15.735	-5374.9
16	5753.1	-2210.6	7.7324	-0.5010	-23.998	-6768.3
17	-2447.4	-1802.3	3.2637	-0.5010	-9.7296	-5817.7
18	1400.1	-1715.2	4.0687	-0.5010	-12.920	-5625.9
19	4677.9	-1781.7	5.2336	-0.5010	-16.960	-5794.9
20	5750.2	-2319.4	8.1061	-0.5010	-24.811	-7006.3
MINIMUM	-2447.4	-2319.4	2.9132	-0.5010	-24.827	-7006.3
Pile N.	17	20	9	1	4	20
MAXIMUM	5761.6	-1535.0	8.1137	-0.5010	-8.9060	-5187.5
Pile N.	4	10	4	1	9	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	-1.5985E-03	-0.013306	2.6563E-05	-1.4211E-06	1.6714E-06	5.5099E-04
2	8.8099E-04	-0.013306	3.2958E-05	-1.4211E-06	1.6714E-06	5.5099E-04
3	3.3605E-03	-0.013306	3.9353E-05	-1.4211E-06	1.6714E-06	5.5099E-04
4	5.8399E-03	-0.013306	4.5748E-05	-1.4211E-06	1.6714E-06	5.5099E-04
5	-1.6060E-03	-0.013313	2.6563E-05	-1.4211E-06	1.6714E-06	5.5099E-04
6	8.7347E-04	-0.013313	3.2958E-05	-1.4211E-06	1.6714E-06	5.5099E-04
7	3.3529E-03	-0.013313	3.9353E-05	-1.4211E-06	1.6714E-06	5.5099E-04
8	5.8324E-03	-0.013313	4.5748E-05	-1.4211E-06	1.6714E-06	5.5099E-04
9	-1.6135E-03	-0.013319	2.6563E-05	-1.4211E-06	1.6714E-06	5.5099E-04
10	8.6595E-04	-0.013319	3.2958E-05	-1.4211E-06	1.6714E-06	5.5099E-04
11	3.3454E-03	-0.013319	3.9353E-05	-1.4211E-06	1.6714E-06	5.5099E-04
12	5.8249E-03	-0.013319	4.5748E-05	-1.4211E-06	1.6714E-06	5.5099E-04
13	-1.6210E-03	-0.013326	2.6563E-05	-1.4211E-06	1.6714E-06	5.5099E-04
14	8.5843E-04	-0.013326	3.2958E-05	-1.4211E-06	1.6714E-06	5.5099E-04
15	3.3379E-03	-0.013326	3.9353E-05	-1.4211E-06	1.6714E-06	5.5099E-04
16	5.8173E-03	-0.013326	4.5748E-05	-1.4211E-06	1.6714E-06	5.5099E-04
17	-1.6286E-03	-0.013332	2.6563E-05	-1.4211E-06	1.6714E-06	5.5099E-04
18	8.5091E-04	-0.013332	3.2958E-05	-1.4211E-06	1.6714E-06	5.5099E-04
19	3.3304E-03	-0.013332	3.9353E-05	-1.4211E-06	1.6714E-06	5.5099E-04
20	5.8098E-03	-0.013332	4.5748E-05	-1.4211E-06	1.6714E-06	5.5099E-04
MINIMUM	-1.6286E-03	-0.013332	2.6563E-05	-1.4211E-06	1.6714E-06	5.5099E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	5.8399E-03	-0.013306	4.5748E-05	-1.4211E-06	1.6714E-06	5.5099E-04
Pile N.	4	1	4	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	-2402.2	-1799.9	3.2668	-0.5010	-9.7367	-5806.9
2	1449.4	-1712.8	4.0725	-0.5010	-12.929	-5615.4
3	4711.2	-1779.4	5.2385	-0.5010	-16.971	-5784.2
4	5761.6	-2316.5	8.1137	-0.5010	-24.827	-6993.6
5	-2413.5	-1615.3	2.9181	-0.5010	-8.9178	-5368.7
6	1437.1	-1536.7	3.6452	-0.5010	-11.901	-5190.3
7	4702.9	-1605.3	4.7224	-0.5010	-15.740	-5369.9
8	5758.8	-2209.2	7.7360	-0.5010	-24.005	-6762.2
9	-2424.8	-1613.6	2.9132	-0.5010	-8.9060	-5365.8
10	1424.8	-1535.0	3.6391	-0.5010	-11.886	-5187.5
11	4694.5	-1603.6	4.7147	-0.5010	-15.721	-5366.9
12	5755.9	-2209.9	7.7342	-0.5010	-24.002	-6765.3
13	-2436.1	-1616.4	2.9167	-0.5010	-8.9144	-5373.8
14	1412.4	-1537.7	3.6435	-0.5010	-11.897	-5195.2
15	4686.2	-1606.3	4.7202	-0.5010	-15.735	-5374.9
16	5753.1	-2210.6	7.7324	-0.5010	-23.998	-6768.3
17	-2447.4	-1802.3	3.2637	-0.5010	-9.7296	-5817.7
18	1400.1	-1715.2	4.0687	-0.5010	-12.920	-5625.9
19	4677.9	-1781.7	5.2336	-0.5010	-16.960	-5794.9
20	5750.2	-2319.4	8.1061	-0.5010	-24.811	-7006.3

<b>APPALTATORE:</b> <b>Consorzio</b> <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>												
<b>PROGETTAZIONE:</b> <b>Mandatario</b> <b>Mandanti</b>   	<b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>												
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	<table border="1"> <tr> <td>COMMESSA</td> <td>LOTTO</td> <td>CODIFICA</td> <td>DOCUMENTO</td> <td>REV.</td> <td>FOGLIO</td> </tr> <tr> <td>IF28</td> <td>01</td> <td>E ZZ CL</td> <td>VI0403 001</td> <td>B</td> <td>331 di 354</td> </tr> </table>	COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO	IF28	01	E ZZ CL	VI0403 001	B	331 di 354
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO								
IF28	01	E ZZ CL	VI0403 001	B	331 di 354								

MINIMUM	-2447.4	-2319.4	2.9132	-0.5010	-24.827	-7006.3
Pile N.	17	20	9	1	4	20
MAXIMUM	5761.6	-1535.0	8.1137	-0.5010	-8.9060	-5187.5
Pile N.	4	10	4	1	9	10

PILE GROUP STRESS, KN/ M\*\*2  
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1	1.8885E+04
2	1.7768E+04
3	2.0123E+04
4	2.4368E+04
5	1.7569E+04
6	1.6478E+04
7	1.8868E+04
8	2.3668E+04
9	1.7566E+04
10	1.6462E+04
11	1.8854E+04
12	2.3675E+04
13	1.7597E+04
14	1.6479E+04
15	1.8874E+04
16	2.3683E+04
17	1.8943E+04
18	1.7771E+04
19	2.0137E+04
20	2.4399E+04

MINIMUM	1.6462E+04
Pile N.	10
MAXIMUM	2.4399E+04
Pile N.	20

\* 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	-0.013306	-5.1877E-07	-2333.9	-9.7367	-1799.7	-0.8955	-425.04	-0.1851	1359.4	7.8279E+06	7.8279E+06
x( M)	0.0000	12.960	7.5600	0.0000	0.0000	10.620	5.0400	13.860	18.000	0.0000	0.0000
2	-0.013306	-6.5717E-07	-2264.2	-12.929	-1712.9	-1.0817	-399.85	-0.2271	820.20	7.8279E+06	7.8279E+06
x( M)	0.0000	13.140	7.7400	0.0000	0.0000	10.800	5.0400	14.040	18.000	0.0000	0.0000
3	-0.013306	-8.0687E-07	-2331.0	-16.971	-1779.7	-1.3734	-421.37	-0.2899	2665.0	7.8279E+06	7.8279E+06
x( M)	0.0000	12.960	7.5600	0.0000	0.0000	10.620	5.0400	13.860	18.000	0.0000	0.0000
4	-0.013306	-9.5692E-07	-2790.8	-24.827	-2316.9	-2.1479	-590.66	-0.4705	3260.4	7.8279E+06	7.8279E+06
x( M)	0.0000	12.060	7.0200	0.0000	0.0000	9.9000	5.0400	12.060	18.000	0.0000	0.0000
5	-0.013313	-5.0756E-07	-2167.0	-8.9178	-1615.2	-0.7946	-368.99	-0.1648	1365.8	7.8279E+06	7.8279E+06
x( M)	0.0000	13.320	7.9200	0.0000	0.0000	10.980	5.0400	14.220	18.000	0.0000	0.0000
6	-0.013313	-6.3830E-07	-2103.5	-11.901	-1536.8	-0.9607	-346.87	-0.2005	813.23	7.8279E+06	7.8279E+06
x( M)	0.0000	13.500	7.9200	0.0000	0.0000	11.160	5.0400	14.400	18.000	0.0000	0.0000
7	-0.013313	-7.8844E-07	-2173.3	-15.740	-1605.5	-1.2281	-368.47	-0.2594	2661.3	7.8279E+06	7.8279E+06
x( M)	0.0000	13.320	7.9200	0.0000	0.0000	10.980	5.0400	14.220	18.000	0.0000	0.0000
8	-0.013313	-9.5997E-07	-2702.0	-24.005	-2209.6	-2.0387	-556.33	-0.4377	3258.8	7.8279E+06	7.8279E+06
x( M)	0.0000	12.240	7.2000	0.0000	0.0000	10.080	5.0400	12.240	18.000	0.0000	0.0000
9	-0.013319	-5.0730E-07	-2165.9	-8.9060	-1613.5	-0.7934	-368.43	-0.1645	1372.2	7.8279E+06	7.8279E+06
x( M)	0.0000	13.320	7.9200	0.0000	0.0000	10.980	5.0400	14.220	18.000	0.0000	0.0000
10	-0.013319	-6.3783E-07	-2102.3	-11.886	-1535.1	-0.9591	-346.34	-0.2002	806.25	7.8279E+06	7.8279E+06
x( M)	0.0000	13.500	7.9200	0.0000	0.0000	11.160	5.0400	14.400	18.000	0.0000	0.0000
11	-0.013319	-7.8793E-07	-2172.1	-15.721	-1603.8	-1.2259	-367.91	-0.2589	2656.6	7.8279E+06	7.8279E+06
x( M)	0.0000	13.320	7.9200	0.0000	0.0000	10.980	5.0400	14.220	18.000	0.0000	0.0000
12	-0.013319	-9.5987E-07	-2703.0	-24.002	-2210.3	-2.0383	-556.51	-0.4376	3257.2	7.8279E+06	7.8279E+06
x( M)	0.0000	12.240	7.2000	0.0000	0.0000	10.080	5.0400	12.240	18.000	0.0000	0.0000
13	-0.013326	-5.0733E-07	-2168.7	-8.9144	-1616.3	-0.7944	-369.22	-0.1648	1378.5	7.8279E+06	7.8279E+06
x( M)	0.0000	13.320	7.9200	0.0000	0.0000	10.980	5.0400	14.220	18.000	0.0000	0.0000
14	-0.013326	-6.3797E-07	-2105.1	-11.897	-1537.8	-0.9604	-347.09	-0.2005	799.28	7.8279E+06	7.8279E+06
x( M)	0.0000	13.500	7.9200	0.0000	0.0000	11.160	5.0400	14.400	18.000	0.0000	0.0000
15	-0.013326	-7.8807E-07	-2174.9	-15.735	-1606.6	-1.2276	-368.71	-0.2593	2651.9	7.8279E+06	7.8279E+06
x( M)	0.0000	13.320	7.9200	0.0000	0.0000	10.980	5.0400	14.220	18.000	0.0000	0.0000
16	-0.013326	-9.5976E-07	-2704.1	-23.998	-2211.0	-2.0380	-556.69	-0.4375	3255.6	7.8279E+06	7.8279E+06
x( M)	0.0000	12.240	7.2000	0.0000	0.0000	10.080	5.0400	12.240	18.000	0.0000	0.0000
17	-0.013332	-5.1839E-07	-2337.4	-9.7296	-1802.2	-0.8949	-425.59	-0.1850	1384.9	7.8279E+06	7.8279E+06
x( M)	0.0000	12.960	7.5600	0.0000	0.0000	10.620	5.0400	13.860	18.000	0.0000	0.0000
18	-0.013332	-6.5659E-07	-2267.6	-12.920	-1715.2	-1.0808	-400.36	-0.2270	792.30	7.8279E+06	7.8279E+06
x( M)	0.0000	13.140	7.7400	0.0000	0.0000	10.800	5.0400	14.040	18.000	0.0000	0.0000
19	-0.013332	-8.0624E-07	-2334.5	-16.960	-1782.0	-1.3722	-421.90	-0.2898	2647.2	7.8279E+06	7.8279E+06
x( M)	0.0000	12.960	7.5600	0.0000	0.0000	10.620	5.0400	13.860	18.000	0.0000	0.0000
20	-0.013332	-9.5650E-07	-2795.0	-24.811	-2319.9	-2.1462	-591.44	-0.4699	3254.0	7.8279E+06	7.8279E+06
x( M)	0.0000	12.060	7.0200	0.0000	0.0000	9.9000	5.0400	12.060	18.000	0.0000	0.0000
Min.	-0.013332	-9.5997E-07	-2795.0	-24.827	-2319.9	-2.1479	-591.44	-0.4705	792.30	7.8279E+06	7.8279E+06
Pile N.	17	8	20	4	20	4	20	4	18	1	1

\* MAXIMUM VALUES AND LOCATIONS \*

APPALDATORE: Consorzio <b>HirpiniaAV</b> Soci <b>salini impregilo</b> <b>ASTALDI</b>		<b>ITINERARIO NAPOLI – BARI</b> <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>			
PROGETTAZIONE: Mandatara <b>ROKSOIL</b> Mandanti <b>NETENGINEERING</b> <b>Alpina</b>					
PROGETTO ESECUTIVO RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B					
COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO
IF28	01	E ZZ CL	VI0403 001	B	332 di 354

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	2.7049E-04	2.6563E-05	5806.9	4.5651	464.40	3.2666	98.122	0.7925	1.8885E+04	7.8279E+06	7.8279E+06
x( M)	12.960	0.0000	0.0000	7.3800	10.620	0.0000	13.860	5.0400	0.0000	0.0000	0.0000
2	2.6986E-04	3.2958E-05	5615.4	5.5561	443.66	4.0727	93.917	0.9619	1.7768E+04	7.8279E+06	7.8279E+06
x( M)	13.140	0.0000	0.0000	7.5600	10.800	0.0000	14.040	5.0400	0.0000	0.0000	0.0000
3	2.7336E-04	3.9353E-05	5784.2	6.8864	465.17	5.2394	98.300	1.2421	2.0123E+04	7.8279E+06	7.8279E+06
x( M)	12.960	0.0000	0.0000	7.5600	10.620	0.0000	13.860	5.0400	0.0000	0.0000	0.0000
4	2.7567E-04	4.5748E-05	6993.6	9.6436	619.51	8.1153	135.55	2.0602	2.4368E+04	7.8279E+06	7.8279E+06
x( M)	12.060	0.0000	0.0000	7.0200	9.9000	0.0000	12.060	5.0400	0.0000	0.0000	0.0000
5	2.6384E-04	2.6563E-05	5368.7	4.2390	412.49	2.9179	87.244	0.6870	1.7569E+04	7.8279E+06	7.8279E+06
x( M)	13.320	0.0000	0.0000	7.5600	10.980	0.0000	14.220	5.0400	0.0000	0.0000	0.0000
6	2.6179E-04	3.2958E-05	5190.3	5.1567	394.31	3.6454	82.891	0.8337	1.6478E+04	7.8279E+06	7.8279E+06
x( M)	13.500	0.0000	0.0000	7.9200	11.160	0.0000	14.400	5.0400	0.0000	0.0000	0.0000
7	2.6721E-04	3.9353E-05	5369.9	6.4174	416.21	4.7233	87.978	1.0855	1.8868E+04	7.8279E+06	7.8279E+06
x( M)	13.320	0.0000	0.0000	7.7400	10.980	0.0000	14.220	5.0400	0.0000	0.0000	0.0000
8	2.7669E-04	4.5748E-05	6762.2	9.3361	588.64	7.7376	126.17	1.9396	2.3668E+04	7.8279E+06	7.8279E+06
x( M)	12.240	0.0000	0.0000	7.2000	9.9000	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
9	2.6378E-04	2.6563E-05	5365.8	4.2344	411.93	2.9129	87.138	0.6855	1.7566E+04	7.8279E+06	7.8279E+06
x( M)	13.320	0.0000	0.0000	7.5600	10.980	0.0000	14.220	5.0400	0.0000	0.0000	0.0000
10	2.6170E-04	3.2958E-05	5187.5	5.1512	393.78	3.6393	82.783	0.8319	1.6462E+04	7.8279E+06	7.8279E+06
x( M)	13.500	0.0000	0.0000	7.9200	11.160	0.0000	14.400	5.0400	0.0000	0.0000	0.0000
11	2.6717E-04	3.9353E-05	5366.9	6.4102	415.67	4.7156	87.873	1.0833	1.8854E+04	7.8279E+06	7.8279E+06
x( M)	13.320	0.0000	0.0000	7.7400	10.980	0.0000	14.220	5.0400	0.0000	0.0000	0.0000
12	2.7681E-04	4.5748E-05	6765.3	9.3350	588.82	7.7358	126.20	1.9392	2.3675E+04	7.8279E+06	7.8279E+06
x( M)	12.240	0.0000	0.0000	7.2000	9.9000	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
13	2.6398E-04	2.6563E-05	5373.8	4.2379	412.73	2.9165	87.316	0.6866	1.7597E+04	7.8279E+06	7.8279E+06
x( M)	13.320	0.0000	0.0000	7.5600	10.980	0.0000	14.220	5.0400	0.0000	0.0000	0.0000
14	2.6191E-04	3.2958E-05	5195.2	5.1553	394.54	3.6437	82.957	0.8333	1.6479E+04	7.8279E+06	7.8279E+06
x( M)	13.500	0.0000	0.0000	7.9200	11.160	0.0000	14.400	5.0400	0.0000	0.0000	0.0000
15	2.6736E-04	3.9353E-05	5374.9	6.4156	416.46	4.7211	88.052	1.0850	1.8874E+04	7.8279E+06	7.8279E+06
x( M)	13.320	0.0000	0.0000	7.7400	10.980	0.0000	14.220	5.0400	0.0000	0.0000	0.0000
16	2.7692E-04	4.5748E-05	6768.3	9.3338	588.99	7.7340	126.22	1.9388	2.3683E+04	7.8279E+06	7.8279E+06
x( M)	12.240	0.0000	0.0000	7.2000	9.9000	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
17	2.7083E-04	2.6563E-05	5817.7	4.5627	464.95	3.2635	98.300	0.7918	1.8943E+04	7.8279E+06	7.8279E+06
x( M)	12.960	0.0000	0.0000	7.3800	10.620	0.0000	13.860	5.0400	0.0000	0.0000	0.0000
18	2.7017E-04	3.2958E-05	5625.9	5.5530	444.19	4.0689	94.078	0.9610	1.7771E+04	7.8279E+06	7.8279E+06
x( M)	13.140	0.0000	0.0000	7.5600	10.800	0.0000	14.040	5.0400	0.0000	0.0000	0.0000
19	2.7371E-04	3.9353E-05	5794.9	6.8827	465.73	5.2346	98.479	1.2410	2.0137E+04	7.8279E+06	7.8279E+06
x( M)	12.960	0.0000	0.0000	7.5600	10.620	0.0000	13.860	5.0400	0.0000	0.0000	0.0000
20	2.7613E-04	4.5748E-05	7006.3	9.6386	620.33	8.1077	135.65	2.0585	2.4399E+04	7.8279E+06	7.8279E+06
x( M)	12.060	0.0000	0.0000	7.0200	9.9000	0.0000	12.060	5.0400	0.0000	0.0000	0.0000
Max.	2.7692E-04	4.5748E-05	7006.3	9.6436	620.33	8.1153	135.65	2.0602	2.4399E+04	7.8279E+06	7.8279E+06
Pile N.	16	4	20	4	20	4	20	4	20	1	1

LOAD CASE : 23  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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	0.8434	1.0000
2	0.7843	1.0000
3	0.7866	1.0000
4	0.8661	1.0000
5	0.5717	1.0000
6	0.4920	1.0000
7	0.4951	1.0000
8	0.6042	1.0000
9	0.5399	1.0000
10	0.4614	1.0000
11	0.4647	1.0000
12	0.5743	1.0000
13	0.5400	1.0000
14	0.4615	1.0000
15	0.4648	1.0000
16	0.5743	1.0000
17	0.5845	1.0000
18	0.5004	1.0000
19	0.5041	1.0000
20	0.6168	1.0000

\* TABLE L \* COMPUTATION ON PILE CAP

\* EQUIVALENT CONCENTRATED LOAD AT ORIGIN \*



<b>APPALTATORE:</b> Consorzio  Soci  		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria  Mandanti  							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>							COMMESSA <b>IF28</b>

1	2.1897E-03	-1.3919E-03	5.7769E-03	-7.0390E-05	1.5812E-04	1.1675E-04
2	2.7150E-03	-1.3919E-03	6.0936E-03	-7.0390E-05	1.5812E-04	1.1675E-04
3	3.2404E-03	-1.3919E-03	6.4104E-03	-7.0390E-05	1.5812E-04	1.1675E-04
4	3.7658E-03	-1.3919E-03	6.7272E-03	-7.0390E-05	1.5812E-04	1.1675E-04
5	1.4781E-03	-1.7086E-03	5.7769E-03	-7.0390E-05	1.5812E-04	1.1675E-04
6	2.0035E-03	-1.7086E-03	6.0936E-03	-7.0390E-05	1.5812E-04	1.1675E-04
7	2.5289E-03	-1.7086E-03	6.4104E-03	-7.0390E-05	1.5812E-04	1.1675E-04
8	3.0542E-03	-1.7086E-03	6.7272E-03	-7.0390E-05	1.5812E-04	1.1675E-04
9	7.6660E-04	-2.0254E-03	5.7769E-03	-7.0390E-05	1.5812E-04	1.1675E-04
10	1.2920E-03	-2.0254E-03	6.0936E-03	-7.0390E-05	1.5812E-04	1.1675E-04
11	1.8173E-03	-2.0254E-03	6.4104E-03	-7.0390E-05	1.5812E-04	1.1675E-04
12	2.3427E-03	-2.0254E-03	6.7272E-03	-7.0390E-05	1.5812E-04	1.1675E-04
13	5.5062E-05	-2.3421E-03	5.7769E-03	-7.0390E-05	1.5812E-04	1.1675E-04
14	5.8043E-04	-2.3421E-03	6.0936E-03	-7.0390E-05	1.5812E-04	1.1675E-04
15	1.1058E-03	-2.3421E-03	6.4104E-03	-7.0390E-05	1.5812E-04	1.1675E-04
16	1.6312E-03	-2.3421E-03	6.7272E-03	-7.0390E-05	1.5812E-04	1.1675E-04
17	-6.5647E-04	-2.6589E-03	5.7769E-03	-7.0390E-05	1.5812E-04	1.1675E-04
18	-1.3111E-04	-2.6589E-03	6.0936E-03	-7.0390E-05	1.5812E-04	1.1675E-04
19	3.9426E-04	-2.6589E-03	6.4104E-03	-7.0390E-05	1.5812E-04	1.1675E-04
20	9.1962E-04	-2.6589E-03	6.7272E-03	-7.0390E-05	1.5812E-04	1.1675E-04

MINIMUM	-6.5647E-04	-2.6589E-03	5.7769E-03	-7.0390E-05	1.5812E-04	1.1675E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	3.7658E-03	-1.3919E-03	6.7272E-03	-7.0390E-05	1.5812E-04	1.1675E-04
Pile N.	4	1	4	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	3417.1	-266.13	1360.1	-24.817	-3923.1	-647.16
2	3997.8	-249.89	1360.2	-24.817	-4007.6	-615.55
3	4578.5	-246.89	1421.3	-24.817	-4213.5	-609.61
4	4976.0	-259.96	1569.8	-24.817	-4595.9	-635.03
5	2428.0	-268.06	1064.7	-24.817	-3313.1	-734.54
6	3211.4	-238.94	1013.5	-24.817	-3271.5	-672.18
7	3792.0	-236.43	1060.8	-24.817	-3445.2	-666.64
8	4372.7	-266.42	1250.0	-24.817	-3931.8	-730.96
9	1262.0	-319.02	1024.1	-24.817	-3222.9	-917.63
10	2122.9	-283.59	970.52	-24.817	-3172.9	-840.28
11	2983.8	-280.77	1016.3	-24.817	-3343.3	-834.12
12	3586.3	-318.44	1207.4	-24.817	-3838.0	-916.51
13	91.076	-379.37	1020.2	-24.817	-3212.4	-1120.3
14	956.87	-337.81	967.11	-24.817	-3163.1	-1029.1
15	1817.8	-334.58	1012.9	-24.817	-3333.7	-1022.0
16	2678.7	-378.84	1203.3	-24.817	-3827.6	-1119.6
17	-987.75	-461.81	1067.3	-24.817	-3312.4	-1370.3
18	-197.63	-412.30	1013.2	-24.817	-3264.7	-1262.8
19	651.78	-408.63	1061.7	-24.817	-3441.8	-1254.9
20	1512.7	-459.39	1253.9	-24.817	-3935.3	-1365.5
MINIMUM	-987.75	-461.81	967.11	-24.817	-4595.9	-1370.3
Pile N.	17	17	14	1	4	17
MAXIMUM	4976.0	-236.43	1569.8	-24.817	-3163.1	-609.61
Pile N.	4	7	4	1	14	3

PILE GROUP	STRESS, KN/ M**2
1	1.3934E+04
2	1.4499E+04
3	1.5440E+04
4	1.6818E+04
5	1.1616E+04
6	1.1897E+04
7	1.2737E+04
8	1.4544E+04
9	1.0828E+04
10	1.1108E+04
11	1.2088E+04
12	1.3938E+04
13	1.0319E+04
14	1.0580E+04
15	1.1552E+04
16	1.3552E+04
17	1.1378E+04
18	1.0676E+04
19	1.1425E+04
20	1.3428E+04
MINIMUM	1.0319E+04
Pile N.	13
MAXIMUM	1.6818E+04
Pile N.	4

\* EFFECTS FOR LATERALLY LOADED PILE \*

\* MINIMUM VALUES AND LOCATIONS \*



<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   	
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>	
COMMESSA <b>IF28</b> LOTTO <b>01</b> CODIFICA <b>E ZZ CL</b> DOCUMENTO <b>VI0403 001</b> REV. <b>B</b> FOGLIO <b>336 di 354</b>	

18	6.4316E-05	6.0937E-03	1262.8	1180.0	103.98	1013.2	22.864	236.10	1.0676E+04	7.8279E+06	7.8279E+06
x( M)	12.600	0.0000	0.0000	7.3800	10.080	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
19	6.3926E-05	6.4104E-03	1254.9	1235.2	102.98	1061.7	22.370	245.92	1.1425E+04	7.8279E+06	7.8279E+06
x( M)	12.600	0.0000	0.0000	7.3800	10.080	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
20	6.1992E-05	6.7272E-03	1365.5	1405.8	117.53	1253.9	26.968	300.56	1.3428E+04	7.8279E+06	7.8279E+06
x( M)	12.240	0.0000	0.0000	7.2000	9.9000	0.0000	12.240	5.0400	0.0000	0.0000	0.0000
Max.	6.4316E-05	6.7272E-03	1370.3	1648.2	118.16	1570.1	27.722	403.89	1.6818E+04	7.8279E+06	7.8279E+06
Pile N.	18	4	17	4	17	4	17	4	4	1	1

LOAD CASE : 24  
CASE NAME : Load Case  
LOAD TYPE : Special, Sp

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	0.5003	1.0000
3	0.5040	1.0000
4	0.6166	1.0000
5	0.5400	1.0000
6	0.4615	1.0000
7	0.4648	1.0000
8	0.5741	1.0000
9	0.5399	1.0000
10	0.4615	1.0000
11	0.4647	1.0000
12	0.5741	1.0000
13	0.5717	1.0000
14	0.4920	1.0000
15	0.4951	1.0000
16	0.6040	1.0000
17	0.8435	1.0000
18	0.7844	1.0000
19	0.7867	1.0000
20	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
41383.0	-6407.28	-22721.5
MOMENT X, KN- M	MOMENT Y, KN- M	MOMENT Z, KN- M
15159.1	-1.06812E+05	59335.8

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

VERTICAL, M	HORIZONTAL Y, M	HORIZONTAL Z, M
1.33213E-03	-1.98494E-03	-6.15165E-03
ANGLE ROT. X,RAD	ANGLE ROT. Y,RAD	ANGLE ROT. Z,RAD
6.74751E-05	-1.48999E-04	1.06890E-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	-7.3037E-04	-2.5922E-03	-5.6962E-03	6.7475E-05	-1.4900E-04	1.0689E-04
2	-2.4937E-04	-2.5922E-03	-5.9998E-03	6.7475E-05	-1.4900E-04	1.0689E-04
3	2.3164E-04	-2.5922E-03	-6.3035E-03	6.7475E-05	-1.4900E-04	1.0689E-04
4	7.1264E-04	-2.5922E-03	-6.6071E-03	6.7475E-05	-1.4900E-04	1.0689E-04
5	-5.9875E-05	-2.2886E-03	-5.6962E-03	6.7475E-05	-1.4900E-04	1.0689E-04
6	4.2113E-04	-2.2886E-03	-5.9998E-03	6.7475E-05	-1.4900E-04	1.0689E-04
7	9.0213E-04	-2.2886E-03	-6.3035E-03	6.7475E-05	-1.4900E-04	1.0689E-04
8	1.3831E-03	-2.2886E-03	-6.6071E-03	6.7475E-05	-1.4900E-04	1.0689E-04
9	6.1062E-04	-1.9849E-03	-5.6962E-03	6.7475E-05	-1.4900E-04	1.0689E-04
10	1.0916E-03	-1.9849E-03	-5.9998E-03	6.7475E-05	-1.4900E-04	1.0689E-04
11	1.5726E-03	-1.9849E-03	-6.3035E-03	6.7475E-05	-1.4900E-04	1.0689E-04
12	2.0536E-03	-1.9849E-03	-6.6071E-03	6.7475E-05	-1.4900E-04	1.0689E-04
13	1.2811E-03	-1.6813E-03	-5.6962E-03	6.7475E-05	-1.4900E-04	1.0689E-04
14	1.7621E-03	-1.6813E-03	-5.9998E-03	6.7475E-05	-1.4900E-04	1.0689E-04



APPALTATORE:

Consorzio

Soci



ITINERARIO NAPOLI – BARI

PROGETTAZIONE:

Mandataria

Mandanti



RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

PROGETTO ESECUTIVO

RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 337 di 354
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15	2.2431E-03	-1.6813E-03	-6.3035E-03	6.7475E-05	-1.4900E-04	1.0689E-04
16	2.7241E-03	-1.6813E-03	-6.6071E-03	6.7475E-05	-1.4900E-04	1.0689E-04
17	1.9516E-03	-1.3777E-03	-5.6962E-03	6.7475E-05	-1.4900E-04	1.0689E-04
18	2.4326E-03	-1.3777E-03	-5.9998E-03	6.7475E-05	-1.4900E-04	1.0689E-04
19	2.9136E-03	-1.3777E-03	-6.3035E-03	6.7475E-05	-1.4900E-04	1.0689E-04
20	3.3946E-03	-1.3777E-03	-6.6071E-03	6.7475E-05	-1.4900E-04	1.0689E-04

MINIMUM	-7.3037E-04	-2.5922E-03	-6.6071E-03	6.7475E-05	-1.4900E-04	1.0689E-04
Pile N.	1	1	4	1	1	1
MAXIMUM	3.3946E-03	-1.3777E-03	-5.6962E-03	6.7475E-05	-1.4900E-04	1.0689E-04
Pile N.	20	17	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	-1098.7	-456.36	-1060.4	23.790	3297.3	-1363.3
2	-375.89	-407.85	-1005.5	23.790	3245.0	-1257.9
3	383.14	-404.46	-1052.5	23.790	3415.6	-1250.5
4	1173.5	-454.63	-1241.4	23.790	3898.4	-1359.8
5	-90.256	-376.56	-1013.6	23.790	3197.8	-1122.0
6	695.82	-335.71	-959.75	23.790	3144.1	-1032.1
7	1484.1	-332.70	-1004.1	23.790	3308.5	-1025.5
8	2272.3	-376.60	-1191.3	23.790	3791.7	-1122.2
9	1006.3	-318.53	-1017.2	23.790	3207.7	-927.28
10	1794.6	-283.54	-963.00	23.790	3153.4	-850.74
11	2582.8	-280.91	-1007.3	23.790	3317.6	-844.92
12	3266.8	-318.41	-1195.0	23.790	3801.6	-927.06
13	2105.1	-269.94	-1057.5	23.790	3296.8	-752.34
14	2893.4	-240.98	-1005.5	23.790	3250.7	-690.20
15	3476.2	-238.60	-1051.2	23.790	3418.1	-684.93
16	4007.9	-268.69	-1237.0	23.790	3894.1	-749.54
17	3154.0	-270.97	-1350.1	23.790	3901.0	-674.76
18	3685.7	-254.76	-1348.7	23.790	3978.9	-643.10
19	4217.3	-251.89	-1407.7	23.790	4177.3	-637.36
20	4748.9	-265.17	-1553.0	23.790	4549.6	-663.28
MINIMUM	-1098.7	-456.36	-1553.0	23.790	3144.1	-1363.3
Pile N.	1	1	20	1	6	1
MAXIMUM	4748.9	-238.60	-959.75	23.790	4549.6	-637.36
Pile N.	20	15	6	1	20	19


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	-7.3037E-04	-2.5922E-03	-5.6962E-03	6.7475E-05	-1.4900E-04	1.0689E-04
2	-2.4937E-04	-2.5922E-03	-5.9998E-03	6.7475E-05	-1.4900E-04	1.0689E-04
3	2.3164E-04	-2.5922E-03	-6.3035E-03	6.7475E-05	-1.4900E-04	1.0689E-04
4	7.1264E-04	-2.5922E-03	-6.6071E-03	6.7475E-05	-1.4900E-04	1.0689E-04
5	-5.9875E-05	-2.2886E-03	-5.6962E-03	6.7475E-05	-1.4900E-04	1.0689E-04
6	4.2113E-04	-2.2886E-03	-5.9998E-03	6.7475E-05	-1.4900E-04	1.0689E-04
7	9.0213E-04	-2.2886E-03	-6.3035E-03	6.7475E-05	-1.4900E-04	1.0689E-04
8	1.3831E-03	-2.2886E-03	-6.6071E-03	6.7475E-05	-1.4900E-04	1.0689E-04
9	6.1062E-04	-1.9849E-03	-5.6962E-03	6.7475E-05	-1.4900E-04	1.0689E-04
10	1.0916E-03	-1.9849E-03	-5.9998E-03	6.7475E-05	-1.4900E-04	1.0689E-04
11	1.5726E-03	-1.9849E-03	-6.3035E-03	6.7475E-05	-1.4900E-04	1.0689E-04
12	2.0536E-03	-1.9849E-03	-6.6071E-03	6.7475E-05	-1.4900E-04	1.0689E-04
13	1.2811E-03	-1.6813E-03	-5.6962E-03	6.7475E-05	-1.4900E-04	1.0689E-04
14	1.7621E-03	-1.6813E-03	-5.9998E-03	6.7475E-05	-1.4900E-04	1.0689E-04
15	2.2431E-03	-1.6813E-03	-6.3035E-03	6.7475E-05	-1.4900E-04	1.0689E-04
16	2.7241E-03	-1.6813E-03	-6.6071E-03	6.7475E-05	-1.4900E-04	1.0689E-04
17	1.9516E-03	-1.3777E-03	-5.6962E-03	6.7475E-05	-1.4900E-04	1.0689E-04
18	2.4326E-03	-1.3777E-03	-5.9998E-03	6.7475E-05	-1.4900E-04	1.0689E-04
19	2.9136E-03	-1.3777E-03	-6.3035E-03	6.7475E-05	-1.4900E-04	1.0689E-04
20	3.3946E-03	-1.3777E-03	-6.6071E-03	6.7475E-05	-1.4900E-04	1.0689E-04
MINIMUM	-7.3037E-04	-2.5922E-03	-6.6071E-03	6.7475E-05	-1.4900E-04	1.0689E-04
Pile N.	1	1	4	1	1	1
MAXIMUM	3.3946E-03	-1.3777E-03	-5.6962E-03	6.7475E-05	-1.4900E-04	1.0689E-04
Pile N.	20	17	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	-1098.7	-456.36	-1060.4	23.790	3297.3	-1363.3
2	-375.89	-407.85	-1005.5	23.790	3245.0	-1257.9
3	383.14	-404.46	-1052.5	23.790	3415.6	-1250.5
4	1173.5	-454.63	-1241.4	23.790	3898.4	-1359.8
5	-90.256	-376.56	-1013.6	23.790	3197.8	-1122.0
6	695.82	-335.71	-959.75	23.790	3144.1	-1032.1
7	1484.1	-332.70	-1004.1	23.790	3308.5	-1025.5
8	2272.3	-376.60	-1191.3	23.790	3791.7	-1122.2

<b>APPALTATORE:</b> <b>Consorzio</b> <b>Soci</b> 	<h2 style="margin: 0;">ITINERARIO NAPOLI – BARI</h2> <h3 style="margin: 0;">RADDOPPIO TRATTA APICE – ORSARA</h3> <h3 style="margin: 0;">I LOTTO FUNZIONALE APICE – HIRPINIA</h3>				
<b>PROGETTAZIONE:</b> <b>Mandataria</b> <b>Mandanti</b> 					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>					
<b>COMMESSA</b> IF28	<b>LOTTO</b> 01	<b>CODIFICA</b> E Z Z CL	<b>DOCUMENTO</b> VI0403 001	<b>REV.</b> B	<b>FOGLIO</b> 338 di 354

9	1006.3	-318.53	-1017.2	23.790	3207.7	-927.28
10	1794.6	-283.54	-963.00	23.790	3153.4	-850.74
11	2582.8	-280.91	-1007.3	23.790	3317.6	-844.92
12	3266.8	-318.41	-1195.0	23.790	3801.6	-927.06
13	2105.1	-269.94	-1057.5	23.790	3296.8	-752.34
14	2893.4	-240.98	-1005.5	23.790	3250.7	-690.20
15	3476.2	-238.60	-1051.2	23.790	3418.1	-684.93
16	4007.9	-268.69	-1237.0	23.790	3894.1	-749.54
17	3154.0	-270.97	-1350.1	23.790	3901.0	-674.76
18	3685.7	-254.76	-1348.7	23.790	3978.9	-643.10
19	4217.3	-251.89	-1407.7	23.790	4177.3	-637.36
20	4748.9	-265.17	-1553.0	23.790	4549.6	-663.28
MINIMUM	-1098.7	-456.36	-1553.0	23.790	3144.1	-1363.3
Pile N.	1	1	20	1	6	1
MAXIMUM	4748.9	-238.60	-959.75	23.790	4549.6	-637.36
Pile N.	20	15	6	1	20	19

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

1	1.1390E+04
2	1.0716E+04
3	1.1194E+04
4	1.3125E+04
5	1.0279E+04
6	1.0381E+04
7	1.1294E+04
8	1.3220E+04
9	1.0647E+04
10	1.0873E+04
11	1.1794E+04
12	1.3658E+04
13	1.1397E+04
14	1.1667E+04
15	1.2488E+04
16	1.4236E+04
17	1.3733E+04
18	1.4250E+04
19	1.5140E+04
20	1.6563E+04
MINIMUM	1.0279E+04
Pile N.	5
MAXIMUM	1.6563E+04
Pile N.	20

\* 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	-2.5922E-03	-5.6962E-03	-534.90	-1194.8	-456.35	-1060.4	-112.12	-257.47	621.74	7.8279E+06	7.8279E+06
x( M)	0.0000	0.0000	7.2000	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000	0.0000
2	-2.5922E-03	-5.9998E-03	-494.52	-1165.9	-407.84	-1005.5	-96.525	-234.51	212.71	7.8279E+06	7.8279E+06
x( M)	0.0000	0.0000	7.2000	7.3800	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
3	-2.5922E-03	-6.3035E-03	-491.60	-1219.0	-404.46	-1052.5	-95.261	-244.01	216.81	7.8279E+06	7.8279E+06
x( M)	0.0000	0.0000	7.3800	7.3800	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
4	-2.5922E-03	-6.6071E-03	-532.67	-1385.9	-454.65	-1241.4	-110.66	-297.85	664.08	7.8279E+06	7.8279E+06
x( M)	0.0000	0.0000	7.0200	7.2000	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
5	-2.2886E-03	-5.6962E-03	-455.39	-1158.8	-376.56	-1013.6	-91.921	-243.16	51.074	7.8279E+06	7.8279E+06
x( M)	0.0000	0.0000	7.0200	7.2000	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
6	-2.2886E-03	-5.9998E-03	-420.86	-1130.0	-335.71	-959.77	-78.883	-220.82	393.75	7.8279E+06	7.8279E+06
x( M)	0.0000	0.0000	7.3800	7.5600	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
7	-2.2886E-03	-6.3035E-03	-418.21	-1181.4	-332.72	-1004.2	-77.777	-229.55	839.81	7.8279E+06	7.8279E+06
x( M)	0.0000	0.0000	7.3800	7.5600	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
8	-2.2886E-03	-6.6071E-03	-454.68	-1347.2	-376.63	-1191.4	-91.131	-282.54	1285.9	7.8279E+06	7.8279E+06
x( M)	0.0000	0.0000	7.0200	7.3800	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
9	-1.9849E-03	-5.6962E-03	-393.92	-1163.4	-318.54	-1017.2	-78.558	-244.94	569.48	7.8279E+06	7.8279E+06
x( M)	0.0000	0.0000	7.0200	7.2000	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
10	-1.9849E-03	-5.9998E-03	-363.82	-1134.0	-283.56	-963.07	-67.346	-222.28	1015.5	7.8279E+06	7.8279E+06
x( M)	0.0000	0.0000	7.2000	7.5600	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
11	-1.9849E-03	-6.3035E-03	-361.34	-1185.2	-280.93	-1007.4	-66.356	-230.92	1461.6	7.8279E+06	7.8279E+06
x( M)	0.0000	0.0000	7.2000	7.5600	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
12	-1.9849E-03	-6.6071E-03	-393.01	-1351.4	-318.45	-1195.1	-77.741	-284.10	1848.6	7.8279E+06	7.8279E+06
x( M)	0.0000	0.0000	7.0200	7.2000	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
13	-1.6813E-03	-5.6962E-03	-340.39	-1197.1	-269.95	-1057.5	-68.115	-258.47	1191.3	7.8279E+06	7.8279E+06
x( M)	0.0000	0.0000	6.8400	7.2000	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
14	-1.6813E-03	-5.9998E-03	-315.34	-1170.0	-241.01	-1005.6	-58.722	-235.95	1637.3	7.8279E+06	7.8279E+06
x( M)	0.0000	0.0000	7.0200	7.3800	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
15	-1.6813E-03	-6.3035E-03	-312.99	-1221.7	-238.63	-1051.3	-57.786	-244.83	1967.1	7.8279E+06	7.8279E+06
x( M)	0.0000	0.0000	7.0200	7.3800	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
16	-1.6813E-03	-6.6071E-03	-338.36	-1385.9	-268.73	-1237.2	-66.927	-297.68	2268.0	7.8279E+06	7.8279E+06
x( M)	0.0000	0.0000	6.8400	7.2000	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
17	-1.3777E-03	-5.6962E-03	-327.29	-1422.5	-271.00	-1350.2	-73.750	-356.09	1784.8	7.8279E+06	7.8279E+06
x( M)	0.0000	0.0000	6.3000	6.6000	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   						<b>ITINERARIO NAPOLI – BARI</b>					
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   						<b>RADDOPPIO TRATTA APICE – ORSARA I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>						COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 339 di 354

18	-1.3777E-03	-5.9998E-03	-313.88	-1438.2	-254.79	-1348.8	-68.003	-347.49	2085.7	7.8279E+06	7.8279E+06
x( M)	0.0000	0.0000	6.4800	6.8400	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
19	-1.3777E-03	-6.3035E-03	-311.23	-1499.9	-251.92	-1407.9	-66.733	-359.56	2386.5	7.8279E+06	7.8279E+06
x( M)	0.0000	0.0000	6.4800	6.8400	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
20	-1.3777E-03	-6.6071E-03	-321.32	-1624.9	-265.21	-1553.2	-70.692	-400.14	2687.3	7.8279E+06	7.8279E+06
x( M)	0.0000	0.0000	6.3000	6.6600	0.0000	0.0000	5.0400	5.0400	18.000	0.0000	0.0000
Min.	-2.5922E-03	-6.6071E-03	-534.90	-1624.9	-456.35	-1553.2	-112.12	-400.14	51.074	7.8279E+06	7.8279E+06
Pile N.	1	4	1	20	1	20	1	20	5	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 M**2	FLEX. RIG. y-DIR M**2
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	6.1844E-05	1.4000E-04	1363.3	3297.3	115.99	261.06	27.344	61.900	1.1390E+04	7.8279E+06	7.8279E+06
x( M)	12.240	12.240	0.0000	0.0000	9.7200	9.9000	12.240	12.240	0.0000	0.0000	0.0000
2	6.3025E-05	1.5048E-04	1257.9	3245.0	102.11	242.39	22.569	53.582	1.0716E+04	7.8279E+06	7.8279E+06
x( M)	12.600	12.600	0.0000	0.0000	10.260	10.260	12.240	12.240	0.0000	0.0000	0.0000
3	6.2653E-05	1.5745E-04	1250.5	3415.6	101.16	253.20	22.097	55.186	1.1194E+04	7.8279E+06	7.8279E+06
x( M)	12.600	12.600	0.0000	0.0000	10.080	10.260	12.240	12.240	0.0000	0.0000	0.0000
4	6.0729E-05	1.6054E-04	1359.8	3898.4	115.52	303.28	26.652	70.457	1.3125E+04	7.8279E+06	7.8279E+06
x( M)	12.240	12.240	0.0000	0.0000	9.9000	9.9000	12.240	12.240	0.0000	0.0000	0.0000
5	5.4916E-05	1.4230E-04	1122.0	3197.8	96.752	247.86	22.358	57.785	1.0279E+04	7.8279E+06	7.8279E+06
x( M)	12.240	12.420	0.0000	0.0000	9.9000	10.080	12.240	12.240	0.0000	0.0000	0.0000
6	5.5628E-05	1.5198E-04	1032.1	3144.1	84.928	229.92	18.225	49.180	1.0381E+04	7.8279E+06	7.8279E+06
x( M)	12.780	12.780	0.0000	0.0000	10.260	10.260	12.240	12.240	0.0000	0.0000	0.0000
7	5.5240E-05	1.5879E-04	1025.5	3308.5	84.137	240.08	17.794	50.464	1.1294E+04	7.8279E+06	7.8279E+06
x( M)	12.780	12.780	0.0000	0.0000	10.260	10.440	12.240	12.240	0.0000	0.0000	0.0000
8	5.3811E-05	1.6280E-04	1122.2	3791.7	96.782	289.66	21.893	66.063	1.3220E+04	7.8279E+06	7.8279E+06
x( M)	12.240	12.420	0.0000	0.0000	9.9000	10.080	12.240	12.240	0.0000	0.0000	0.0000
9	4.7123E-05	1.4266E-04	927.28	3207.7	83.613	249.65	19.346	58.458	1.0647E+04	7.8279E+06	7.8279E+06
x( M)	12.240	12.420	0.0000	0.0000	9.9000	9.9000	12.240	12.240	0.0000	0.0000	0.0000
10	4.7803E-05	1.5259E-04	850.74	3153.4	73.303	231.46	15.844	49.813	1.0873E+04	7.8279E+06	7.8279E+06
x( M)	12.600	12.780	0.0000	0.0000	10.260	10.260	12.240	12.240	0.0000	0.0000	0.0000
11	4.7432E-05	1.5942E-04	844.92	3317.6	72.619	241.29	15.460	51.062	1.1794E+04	7.8279E+06	7.8279E+06
x( M)	12.600	12.780	0.0000	0.0000	10.260	10.440	12.240	12.240	0.0000	0.0000	0.0000
12	4.6152E-05	1.6314E-04	927.06	3801.6	83.513	291.00	18.896	66.661	1.3658E+04	7.8279E+06	7.8279E+06
x( M)	12.240	12.420	0.0000	0.0000	9.9000	10.080	12.240	12.240	0.0000	0.0000	0.0000
13	3.8833E-05	1.4151E-04	752.34	3296.8	73.330	261.97	17.135	62.580	1.1397E+04	7.8279E+06	7.8279E+06
x( M)	12.060	12.240	0.0000	0.0000	9.7200	9.9000	12.060	12.240	0.0000	0.0000	0.0000
14	3.9635E-05	1.5225E-04	690.20	3250.7	64.585	243.73	14.340	54.438	1.1667E+04	7.8279E+06	7.8279E+06
x( M)	12.420	12.600	0.0000	0.0000	10.080	10.260	12.240	12.240	0.0000	0.0000	0.0000
15	3.9363E-05	1.5919E-04	684.93	3418.1	63.914	254.05	13.996	55.827	1.2488E+04	7.8279E+06	7.8279E+06
x( M)	12.420	12.600	0.0000	0.0000	10.080	10.260	12.240	12.240	0.0000	0.0000	0.0000
16	3.8099E-05	1.6209E-04	749.54	3894.1	72.736	303.47	16.608	70.808	1.4236E+04	7.8279E+06	7.8279E+06
x( M)	12.060	12.240	0.0000	0.0000	9.7200	9.9000	12.060	12.240	0.0000	0.0000	0.0000
17	2.7733E-05	1.2626E-04	674.76	3901.0	78.162	347.28	19.531	89.029	1.3733E+04	7.8279E+06	7.8279E+06
x( M)	11.160	11.340	0.0000	0.0000	9.0000	9.1800	10.980	11.340	0.0000	0.0000	0.0000
18	2.8491E-05	1.3721E-04	643.10	3978.9	73.048	342.55	17.839	86.134	1.4250E+04	7.8279E+06	7.8279E+06
x( M)	11.340	11.520	0.0000	0.0000	9.1800	9.3600	11.340	11.700	0.0000	0.0000	0.0000
19	2.8519E-05	1.4459E-04	637.36	4177.3	72.034	355.40	17.436	88.652	1.5140E+04	7.8279E+06	7.8279E+06
x( M)	11.340	11.520	0.0000	0.0000	9.1800	9.3600	11.340	11.700	0.0000	0.0000	0.0000
20	2.7795E-05	1.4781E-04	663.28	4549.6	75.825	392.67	18.546	98.870	1.6563E+04	7.8279E+06	7.8279E+06
x( M)	11.160	11.340	0.0000	0.0000	9.0000	9.1800	11.160	11.520	0.0000	0.0000	0.0000
Max.	6.3025E-05	1.6314E-04	1363.3	4549.6	115.99	392.67	27.344	98.870	1.6563E+04	7.8279E+06	7.8279E+06
Pile N.	2	12	1	20	1	20	1	20	20	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
64995.0	-3790.08	951.681	-2818.60	8975.77	74380.9

\* 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
2.11681E-03	-1.11387E-03	2.10419E-04	-6.86679E-06	1.08072E-05	1.27894E-04

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	1.1563E-03	-1.1757E-03	1.6407E-04	-6.8668E-06	1.0807E-05	1.2789E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	3.0774E-03	-1.0521E-03	2.5677E-04	-6.8668E-06	1.0807E-05	1.2789E-04
Pile N.	4	1	4	1	1	1

APPALTATORE:

Consorzio

Soci



ITINERARIO NAPOLI – BARI

PROGETTAZIONE:

Mandataria

Mandanti



RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

PROGETTO ESECUTIVO

RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

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\* 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	1900.5	-254.98	31.611	-2.4210	-194.44	-556.99
Pile N.	17	20	9	1	4	20
MAXIMUM	4398.3	-157.38	72.190	-2.4210	-87.630	-347.65
Pile N.	4	6	4	1	13	6

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x, RAD	ROT. y, RAD	ROT. z, RAD
MINIMUM	1.1563E-03	-1.1757E-03	1.6407E-04	-6.8668E-06	1.0807E-05	1.2789E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	3.0774E-03	-1.0521E-03	2.5677E-04	-6.8668E-06	1.0807E-05	1.2789E-04
Pile N.	4	1	4	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	1900.5	-254.98	31.611	-2.4210	-194.44	-556.99
Pile N.	17	20	9	1	4	20
MAXIMUM	4398.3	-157.38	72.190	-2.4210	-87.630	-347.65
Pile N.	4	6	4	1	13	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.	-1.1757E-03	-5.7648E-06	-362.92	-194.44	-255.00	-22.848	-130.24	-6.5930	1075.5
Pile N.	17	11	20	4	20	4	4	4	17
Max.	2.7443E-05	2.5677E-04	556.99	85.906	95.549	72.199	27.198	37.576	4146.5
Pile N.	14	4	20	4	20	4	20	4	20

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
64721.6	-10750.9	951.681	-2887.21	8951.88	1.16252E+05

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X, RAD	ROT Y, RAD	ROT Z, RAD
2.22974E-03	-2.98237E-03	2.33858E-04	-8.15220E-06	1.20575E-05	2.29848E-04

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X, RAD	ROT. Y, RAD	ROT. Z, RAD
MINIMUM	5.6975E-04	-3.0557E-03	1.7883E-04	-8.1522E-06	1.2057E-05	2.2985E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	3.8897E-03	-2.9090E-03	2.8889E-04	-8.1522E-06	1.2057E-05	2.2985E-04
Pile N.	4	1	4	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	939.37	-699.20	30.131	-2.8742	-206.64	-1728.7
Pile N.	17	20	13	1	4	20
MAXIMUM	5023.0	-454.54	76.115	-2.8742	-83.316	-1220.9
Pile N.	4	6	4	1	13	6

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x, RAD	ROT. y, RAD	ROT. z, RAD
MINIMUM	5.6975E-04	-3.0557E-03	1.7883E-04	-8.1522E-06	1.2057E-05	2.2985E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	3.8897E-03	-2.9090E-03	2.8889E-04	-8.1522E-06	1.2057E-05	2.2985E-04
Pile N.	4	1	4	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	939.37	-699.20	30.131	-2.8742	-206.64	-1728.7
Pile N.	17	20	13	1	4	20
MAXIMUM	5023.0	-454.54	76.115	-2.8742	-83.316	-1220.9
Pile N.	4	6	4	1	13	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.	-3.0557E-03	-6.4682E-06	-855.64	-206.64	-699.30	-23.538	-239.50	-6.9411	531.58
Pile N.	17	15	20	4	20	4	4	4	17
Max.	7.5686E-05	2.8889E-04	1728.7	87.869	225.22	76.126	64.836	26.575	8048.7

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>							

Pile N. 14 4 20 4 4 4 4 4 20

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
62121.4	-9696.71	820.871	-2230.59	8219.10	91779.1

\* 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
2.05260E-03	-2.55493E-03	1.96266E-04	-5.91166E-06	9.48748E-06	1.76156E-04

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	7.7816E-04	-2.6081E-03	1.5636E-04	-5.9117E-06	9.4875E-06	1.7616E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	3.3270E-03	-2.5017E-03	2.3617E-04	-5.9117E-06	9.4875E-06	1.7616E-04
Pile N.	4	1	4	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	1280.9	-631.50	27.534	-2.0843	-171.91	-1600.2
Pile N.	17	20	13	1	4	20
MAXIMUM	4674.2	-411.35	63.222	-2.0843	-77.824	-1140.6
Pile N.	4	6	4	1	13	6

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	7.7816E-04	-2.6081E-03	1.5636E-04	-5.9117E-06	9.4875E-06	1.7616E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	3.3270E-03	-2.5017E-03	2.3617E-04	-5.9117E-06	9.4875E-06	1.7616E-04
Pile N.	4	1	4	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	1280.9	-631.50	27.534	-2.0843	-171.91	-1600.2
Pile N.	17	20	13	1	4	20
MAXIMUM	4674.2	-411.35	63.222	-2.0843	-77.824	-1140.6
Pile N.	4	6	4	1	13	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.	-2.6081E-03	-5.2868E-06	-775.12	-171.91	-631.58	-19.586	-229.20	-5.7854	724.85
Pile N.	17	11	20	4	20	4	4	4	17
Max.	6.4453E-05	2.3617E-04	1600.2	72.975	206.91	63.231	60.725	22.948	7395.3
Pile N.	14	4	20	4	20	4	20	4	20

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
66362.7	-10280.5	1293.36	-3786.84	15522.1	1.06545E+05

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
2.26643E-03	-2.81654E-03	3.29237E-04	-1.05129E-05	2.03711E-05	2.12544E-04

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	6.4842E-04	-2.9112E-03	2.5827E-04	-1.0513E-05	2.0371E-05	2.1254E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	3.8844E-03	-2.7219E-03	4.0020E-04	-1.0513E-05	2.0371E-05	2.1254E-04
Pile N.	4	1	4	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	1068.3	-673.57	41.666	-3.7065	-272.51	-1677.2
Pile N.	17	20	13	1	4	20
MAXIMUM	5021.0	-432.92	102.71	-3.7065	-110.20	-1168.7
Pile N.	4	6	4	1	13	6

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	6.4842E-04	-2.9112E-03	2.5827E-04	-1.0513E-05	2.0371E-05	2.1254E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	3.8844E-03	-2.7219E-03	4.0020E-04	-1.0513E-05	2.0371E-05	2.1254E-04
Pile N.	4	1	4	1	1	1

APPALTATORE:

Consorzio

Soci



ITINERARIO NAPOLI – BARI

PROGETTAZIONE:

Mandataria

Mandanti



RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

PROGETTO ESECUTIVO

RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

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MINIMUM	6.4842E-04	-2.9112E-03	2.5827E-04	-1.0513E-05	2.0371E-05	2.1254E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	3.8844E-03	-2.7219E-03	4.0020E-04	-1.0513E-05	2.0371E-05	2.1254E-04
Pile N.	4	1	4	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	1068.3	-673.57	41.666	-3.7065	-272.51	-1677.2
Pile N.	17	20	13	1	4	20
MAXIMUM	5021.0	-432.92	102.71	-3.7065	-110.20	-1168.7
Pile N.	4	6	4	1	13	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.	-2.9112E-03	-8.8227E-06	-820.93	-272.51	-673.67	-32.478	-229.94	-9.5706	604.53
Pile N.	17	15	20	4	20	4	4	4	17
Max.	7.1615E-05	4.0020E-04	1677.2	121.24	215.78	102.72	62.021	36.689	7888.0
Pile N.	14	4	20	4	20	4	4	4	20

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
43281.8	-5560.41	1074.70	-2681.66	11403.5	51955.9

\* 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
1.32030E-03	-1.32240E-03	2.39124E-04	-6.70135E-06	1.14197E-05	8.17746E-05

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	6.6555E-04	-1.3827E-03	1.9389E-04	-6.7013E-06	1.1420E-05	8.1775E-05
Pile N.	17	17	1	1	1	1
MAXIMUM	1.9751E-03	-1.2621E-03	2.8436E-04	-6.7013E-06	1.1420E-05	8.1775E-05
Pile N.	4	1	4	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	1096.4	-358.50	37.774	-2.3627	-215.07	-928.26
Pile N.	17	20	13	1	4	20
MAXIMUM	3179.9	-237.48	79.475	-2.3627	-107.04	-675.23
Pile N.	4	10	4	1	13	10

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	6.6555E-04	-1.3827E-03	1.9389E-04	-6.7013E-06	1.1420E-05	8.1775E-05
Pile N.	17	17	1	1	1	1
MAXIMUM	1.9751E-03	-1.2621E-03	2.8436E-04	-6.7013E-06	1.1420E-05	8.1775E-05
Pile N.	4	1	4	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	1096.4	-358.50	37.774	-2.3627	-215.07	-928.26
Pile N.	17	20	13	1	4	20
MAXIMUM	3179.9	-237.48	79.475	-2.3627	-107.04	-675.23
Pile N.	4	10	4	1	13	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.	-1.3827E-03	-6.4504E-06	-440.60	-215.07	-358.53	-25.014	-157.50	-7.2454	620.41
Pile N.	17	11	20	4	20	4	20	4	17
Max.	3.3465E-05	2.8436E-04	928.26	93.738	117.19	79.483	33.849	35.870	4518.7
Pile N.	15	4	20	4	20	4	20	4	20



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
66362.7	-10280.5	1293.36	-3786.84	15522.1	1.06545E+05

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>				
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>					
<b>COMMESSA</b> <b>IF28</b>	<b>LOTTO</b> <b>01</b>	<b>CODIFICA</b> <b>E ZZ CL</b>	<b>DOCUMENTO</b> <b>VI0403 001</b>	<b>REV.</b> <b>B</b>	<b>FOGLIO</b> <b>343 di 354</b>

DISP X, M      DISP Y, M      DISP Z, M      ROT X,RAD      ROT Y,RAD      ROT Z,RAD  
 2.26643E-03    -2.81654E-03    3.29237E-04    -1.05129E-05    2.03711E-05    2.12544E-04

**\* PILE TOP DISPLACEMENTS, GLOBAL \***

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	6.4842E-04	-2.9112E-03	2.5827E-04	-1.0513E-05	2.0371E-05	2.1254E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	3.8844E-03	-2.7219E-03	4.0020E-04	-1.0513E-05	2.0371E-05	2.1254E-04
Pile N.	4	1	4	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	1068.3	-673.57	41.666	-3.7065	-272.51	-1677.2
Pile N.	17	20	13	1	4	20
MAXIMUM	5021.0	-432.92	102.71	-3.7065	-110.20	-1168.7
Pile N.	4	6	4	1	13	6

**\* PILE TOP DISPLACEMENTS, LOCAL \***

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	6.4842E-04	-2.9112E-03	2.5827E-04	-1.0513E-05	2.0371E-05	2.1254E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	3.8844E-03	-2.7219E-03	4.0020E-04	-1.0513E-05	2.0371E-05	2.1254E-04
Pile N.	4	1	4	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	1068.3	-673.57	41.666	-3.7065	-272.51	-1677.2
Pile N.	17	20	13	1	4	20
MAXIMUM	5021.0	-432.92	102.71	-3.7065	-110.20	-1168.7
Pile N.	4	6	4	1	13	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.	-2.9112E-03	-8.8227E-06	-820.93	-272.51	-673.67	-32.478	-229.94	-9.5706	604.53
Pile N.	17	15	20	4	20	4	4	4	17
Max.	7.1615E-05	4.0020E-04	1677.2	121.24	215.78	102.72	62.021	36.689	7888.0
Pile N.	14	4	20	4	20	4	4	4	20

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
51173.6	-4260.48	1293.36	-3752.54	15546.0	61247.4

**\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \***

DISP X, M	DISP Y, M	DISP Z, M	ROT X,RAD	ROT Y,RAD	ROT Z,RAD
1.59002E-03	-1.10218E-03	2.91034E-04	-9.39263E-06	1.60751E-05	9.49983E-05

**\* PILE TOP DISPLACEMENTS, GLOBAL \***

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	8.0411E-04	-1.1867E-03	2.2763E-04	-9.3926E-06	1.6075E-05	9.4998E-05
Pile N.	17	17	1	1	1	1
MAXIMUM	2.3759E-03	-1.0176E-03	3.5443E-04	-9.3926E-06	1.6075E-05	9.4998E-05
Pile N.	4	1	4	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	1323.4	-286.32	42.919	-3.3116	-263.13	-698.54
Pile N.	17	20	13	1	4	20
MAXIMUM	3623.0	-177.25	98.434	-3.3116	-117.09	-454.98
Pile N.	4	6	4	1	13	6

**\* PILE TOP DISPLACEMENTS, LOCAL \***

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	8.0411E-04	-1.1867E-03	2.2763E-04	-9.3926E-06	1.6075E-05	9.4998E-05
Pile N.	17	17	1	1	1	1
MAXIMUM	2.3759E-03	-1.0176E-03	3.5443E-04	-9.3926E-06	1.6075E-05	9.4998E-05
Pile N.	4	1	4	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	1323.4	-286.32	42.919	-3.3116	-263.13	-698.54
Pile N.	17	20	13	1	4	20
MAXIMUM	3623.0	-177.25	98.434	-3.3116	-117.09	-454.98

<b>APPALDATORE:</b> Consorzio  Soci  		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria  Mandanti  							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>							
		COMMESSA	LOTTO	CODIFICA	DOCUMENTO	REV.	FOGLIO
		IF28	01	E ZZ CL	VI0403 001	B	344 di 354

Pile N. 4 6 4 1 13 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.	-1.1867E-03	-7.9142E-06	-373.68	-263.13	-286.34	-31.348	-136.35	-9.0450	748.90
Pile N.	17	11	20	4	20	4	20	4	17
Max.	2.8363E-05	3.5443E-04	698.54	117.91	98.796	98.445	28.305	49.268	4118.6
Pile N.	14	4	20	4	20	4	20	4	20

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
62121.4	-9696.71	820.871	-2230.59	8219.10	91779.1

\* 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
2.05260E-03	-2.55493E-03	1.96266E-04	-5.91166E-06	9.48748E-06	1.76156E-04

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	7.7816E-04	-2.6081E-03	1.5636E-04	-5.9117E-06	9.4875E-06	1.7616E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	3.3270E-03	-2.5017E-03	2.3617E-04	-5.9117E-06	9.4875E-06	1.7616E-04
Pile N.	4	1	4	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	1280.9	-631.50	27.534	-2.0843	-171.91	-1600.2
Pile N.	17	20	13	1	4	20
MAXIMUM	4674.2	-411.35	63.222	-2.0843	-77.824	-1140.6
Pile N.	4	6	4	1	13	6

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	7.7816E-04	-2.6081E-03	1.5636E-04	-5.9117E-06	9.4875E-06	1.7616E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	3.3270E-03	-2.5017E-03	2.3617E-04	-5.9117E-06	9.4875E-06	1.7616E-04
Pile N.	4	1	4	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	1280.9	-631.50	27.534	-2.0843	-171.91	-1600.2
Pile N.	17	20	13	1	4	20
MAXIMUM	4674.2	-411.35	63.222	-2.0843	-77.824	-1140.6
Pile N.	4	6	4	1	13	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.	-2.6081E-03	-5.2868E-06	-775.12	-171.91	-631.58	-19.586	-229.20	-5.7854	724.85
Pile N.	17	11	20	4	20	4	20	4	17
Max.	6.4453E-05	2.3617E-04	1600.2	72.975	206.91	63.231	60.725	22.948	7395.3
Pile N.	14	4	20	4	20	4	20	4	20

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
43281.8	-5560.41	1074.70	-2681.66	11403.5	51954.7

\* 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
1.32030E-03	-1.32240E-03	2.39124E-04	-6.70135E-06	1.14197E-05	8.17731E-05

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	6.6556E-04	-1.3827E-03	1.9389E-04	-6.7013E-06	1.1420E-05	8.1773E-05
Pile N.	17	17	1	1	1	1
MAXIMUM	1.9750E-03	-1.2621E-03	2.8436E-04	-6.7013E-06	1.1420E-05	8.1773E-05
Pile N.	4	1	4	1	1	1



<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>				
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>					
<b>COMMESSA</b> IF28	<b>LOTTO</b> 01	<b>CODIFICA</b> E Z CL	<b>DOCUMENTO</b> VI0403 001	<b>REV.</b> B	<b>FOGLIO</b> 345 di 354

\* 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	1096.4	-358.50	37.774	-2.3627	-215.07	-928.27
Pile N.	17	20	13	1	4	20
MAXIMUM	3179.9	-237.48	79.475	-2.3627	-107.04	-675.23
Pile N.	4	10	4	1	13	10

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x, RAD	ROT. y, RAD	ROT. z, RAD
MINIMUM	6.6556E-04	-1.3827E-03	1.9389E-04	-6.7013E-06	1.1420E-05	8.1773E-05
Pile N.	17	17	1	1	1	1
MAXIMUM	1.9750E-03	-1.2621E-03	2.8436E-04	-6.7013E-06	1.1420E-05	8.1773E-05
Pile N.	4	1	4	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	1096.4	-358.50	37.774	-2.3627	-215.07	-928.27
Pile N.	17	20	13	1	4	20
MAXIMUM	3179.9	-237.48	79.475	-2.3627	-107.04	-675.23
Pile N.	4	10	4	1	13	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.	-1.3827E-03	-6.4504E-06	-440.60	-215.07	-358.53	-25.014	-157.50	-7.2454	620.42
Pile N.	17	11	20	4	20	4	4	4	17
Max.	3.3465E-05	2.8436E-04	928.27	93.738	117.19	79.483	33.849	35.870	4518.7
Pile N.	15	4	20	4	20	4	20	4	20

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
64721.6	-10750.9	951.681	-2887.21	8951.88	1.16253E+05

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

DISP X, M	DISP Y, M	DISP Z, M	ROT X, RAD	ROT Y, RAD	ROT Z, RAD
2.22975E-03	-2.98238E-03	2.33858E-04	-8.15220E-06	1.20575E-05	2.29851E-04

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X, RAD	ROT. Y, RAD	ROT. Z, RAD
MINIMUM	5.6974E-04	-3.0557E-03	1.7883E-04	-8.1522E-06	1.2057E-05	2.2985E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	3.8898E-03	-2.9090E-03	2.8889E-04	-8.1522E-06	1.2057E-05	2.2985E-04
Pile N.	4	1	4	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	939.35	-699.20	30.131	-2.8742	-206.64	-1728.7
Pile N.	17	20	13	1	4	20
MAXIMUM	5023.0	-454.54	76.115	-2.8742	-83.316	-1220.9
Pile N.	4	6	4	1	13	6

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. X, M	DISP. Y, M	DISP. z, M	ROT. x, RAD	ROT. y, RAD	ROT. z, RAD
MINIMUM	5.6974E-04	-3.0557E-03	1.7883E-04	-8.1522E-06	1.2057E-05	2.2985E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	3.8898E-03	-2.9090E-03	2.8889E-04	-8.1522E-06	1.2057E-05	2.2985E-04
Pile N.	4	1	4	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	939.35	-699.20	30.131	-2.8742	-206.64	-1728.7
Pile N.	17	20	13	1	4	20
MAXIMUM	5023.0	-454.54	76.115	-2.8742	-83.316	-1220.9
Pile N.	4	6	4	1	13	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.	-3.0557E-03	-6.4682E-06	-855.65	-206.64	-699.30	-23.538	-239.50	-6.9411	531.57
Pile N.	17	15	20	4	20	4	4	4	17
Max.	7.5686E-05	2.8889E-04	1728.7	87.869	225.22	76.126	64.836	26.575	8048.7

<b>APPALTATORE:</b> Consorzio <b>Soci</b> 	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>				
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b> 					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>					
<b>COMMESSA</b> <b>IF28</b>	<b>LOTTO</b> <b>01</b>	<b>CODIFICA</b> <b>E ZZ CL</b>	<b>DOCUMENTO</b> <b>VI0403 001</b>	<b>REV.</b> <b>B</b>	<b>FOGLIO</b> <b>346 di 354</b>

Pile N. 14 4 20 4 4 4 4 4 20

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
50790.8	-8769.18	1293.36	-3786.85	15546.0	90002.8

\* 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
1.62219E-03	-2.27514E-03	3.12320E-04	-9.94928E-06	1.70499E-05	1.55278E-04

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	4.2062E-04	-2.3647E-03	2.4516E-04	-9.9493E-06	1.7050E-05	1.5528E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	2.8238E-03	-2.1856E-03	3.7948E-04	-9.9493E-06	1.7050E-05	1.5528E-04
Pile N.	4	1	4	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	694.98	-579.44	42.146	-3.5078	-271.13	-1475.8
Pile N.	17	20	13	1	4	20
MAXIMUM	4118.0	-368.55	100.96	-3.5078	-115.41	-1021.1
Pile N.	4	6	4	1	13	6

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	4.2062E-04	-2.3647E-03	2.4516E-04	-9.9493E-06	1.7050E-05	1.5528E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	2.8238E-03	-2.1856E-03	3.7948E-04	-9.9493E-06	1.7050E-05	1.5528E-04
Pile N.	4	1	4	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	694.98	-579.44	42.146	-3.5078	-271.13	-1475.8
Pile N.	17	20	13	1	4	20
MAXIMUM	4118.0	-368.55	100.96	-3.5078	-115.41	-1021.1
Pile N.	4	6	4	1	13	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.	-2.3647E-03	-8.2651E-06	-709.86	-271.13	-579.51	-31.688	-215.58	-9.2975	393.28
Pile N.	17	15	20	4	20	4	20	4	17
Max.	5.7456E-05	3.7948E-04	1475.8	118.26	189.34	100.97	55.407	38.240	6665.7
Pile N.	14	4	20	4	20	4	20	4	20

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
62121.4	-9696.71	820.871	-2230.59	8219.10	91781.0

\* 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
2.05261E-03	-2.55494E-03	1.96266E-04	-5.91165E-06	9.48748E-06	1.76159E-04

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	7.7815E-04	-2.6082E-03	1.5636E-04	-5.9117E-06	9.4875E-06	1.7616E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	3.3271E-03	-2.5017E-03	2.3617E-04	-5.9117E-06	9.4875E-06	1.7616E-04
Pile N.	4	1	4	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	1280.9	-631.50	27.534	-2.0843	-171.91	-1600.2
Pile N.	17	20	13	1	4	20
MAXIMUM	4674.3	-411.35	63.222	-2.0843	-77.824	-1140.6
Pile N.	4	6	4	1	13	6

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	7.7815E-04	-2.6082E-03	1.5636E-04	-5.9117E-06	9.4875E-06	1.7616E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	3.3271E-03	-2.5017E-03	2.3617E-04	-5.9117E-06	9.4875E-06	1.7616E-04
Pile N.	4	1	4	1	1	1

APPALTATORE:

Consorzio

Soci



ITINERARIO NAPOLI – BARI

PROGETTAZIONE:

Mandataria

Mandanti



RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

PROGETTO ESECUTIVO

RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

COMMESSA IF28	LOTTO 01	CODIFICA E Z CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 347 di 354
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MINIMUM	7.7815E-04	-2.6082E-03	1.5636E-04	-5.9117E-06	9.4875E-06	1.7616E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	3.3271E-03	-2.5017E-03	2.3617E-04	-5.9117E-06	9.4875E-06	1.7616E-04
Pile N.	4	1	4	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	1280.9	-631.50	27.534	-2.0843	-171.91	-1600.2
Pile N.	17	20	13	1	4	20
MAXIMUM	4674.3	-411.35	63.222	-2.0843	-77.824	-1140.6
Pile N.	4	6	4	1	13	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.	-2.6081E-03	-5.2868E-06	-775.12	-171.91	-631.58	-19.586	-229.20	-5.7854	724.83
Pile N.	17	11	20	4	20	4	20	4	17
Max.	6.4453E-05	2.3617E-04	1600.2	72.975	206.91	63.231	60.725	22.948	7395.3
Pile N.	14	4	20	4	20	4	20	4	20

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
41435.8	13169.1	98.3994	-358.579	1244.66	-19231.9

\* 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
1.26078E-03	3.04631E-03	2.53758E-05	-1.34953E-06	1.15257E-06	-7.13303E-05

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	7.6893E-04	3.0342E-03	1.6266E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
Pile N.	20	17	1	1	1	1
MAXIMUM	1.7526E-03	3.0585E-03	3.4485E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
Pile N.	1	1	4	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	1265.8	569.87	3.5711	-0.4758	-21.315	1814.0
Pile N.	20	15	5	1	20	15
MAXIMUM	2877.8	826.77	7.1704	-0.4758	-9.0375	2335.3
Pile N.	1	1	20	1	5	1

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	7.6893E-04	3.0342E-03	1.6266E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
Pile N.	20	17	1	1	1	1
MAXIMUM	1.7526E-03	3.0585E-03	3.4485E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
Pile N.	1	1	4	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	1265.8	569.87	3.5711	-0.4758	-21.315	1814.0
Pile N.	20	15	5	1	20	15
MAXIMUM	2877.8	826.77	7.1704	-0.4758	-9.0375	2335.3
Pile N.	1	1	20	1	5	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.	-8.3497E-05	-8.9783E-07	-2335.3	-21.315	-232.31	-2.0141	-65.875	-0.5609	716.28
Pile N.	7	12	1	20	1	20	1	20	20
Max.	3.0585E-03	3.4485E-05	881.46	8.3992	826.84	7.1707	259.49	2.1001	8676.5
Pile N.	1	4	1	20	1	20	1	20	1




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
41383.0	-36126.8	98.3994	-297.079	1244.66	1.91967E+05

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>				
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>					
<b>COMMESSA</b> IF28	<b>LOTTO</b> 01	<b>CODIFICA</b> E ZZ CL	<b>DOCUMENTO</b> VI0403 001	<b>REV.</b> B	<b>FOGLIO</b> 348 di 354

DISP X, M      DISP Y, M      DISP Z, M      ROT X,RAD      ROT Y,RAD      ROT Z,RAD  
 1.78356E-03    -0.0131501    3.60072E-05    -1.41527E-06    1.66033E-06    5.15023E-04

**\* PILE TOP DISPLACEMENTS, GLOBAL \***

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	-1.7078E-03	-0.013163	2.6454E-05	-1.4153E-06	1.6603E-06	5.1502E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	5.2749E-03	-0.013137	4.5560E-05	-1.4153E-06	1.6603E-06	5.1502E-04
Pile N.	4	1	4	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	-2566.4	-2317.9	2.9137	-0.4990	-24.790	-7033.5
Pile N.	17	20	9	1	4	20
MAXIMUM	5547.6	-1535.9	8.1128	-0.4990	-8.9012	-5220.1
Pile N.	4	10	4	1	9	10

**\* PILE TOP DISPLACEMENTS, LOCAL \***

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	-1.7078E-03	-0.013163	2.6454E-05	-1.4153E-06	1.6603E-06	5.1502E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	5.2749E-03	-0.013137	4.5560E-05	-1.4153E-06	1.6603E-06	5.1502E-04
Pile N.	4	1	4	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	-2566.4	-2317.9	2.9137	-0.4990	-24.790	-7033.5
Pile N.	17	20	9	1	4	20
MAXIMUM	5547.6	-1535.9	8.1128	-0.4990	-8.9012	-5220.1
Pile N.	4	10	4	1	9	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.	-0.013163	-9.5439E-07	-2768.4	-24.790	-2318.4	-2.1412	-589.28	-0.4701	568.73
Pile N.	17	8	20	4	20	4	20	4	18
Max.	2.7407E-04	4.5560E-05	7033.5	9.6140	615.33	8.1144	134.92	2.0576	2.4360E+04
Pile N.	16	4	20	4	20	4	20	4	20

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
41383.0	-6407.28	-22721.5	15159.1	-1.06812E+05	59335.1

**\* 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
1.33213E-03	-1.98494E-03	-6.15165E-03	6.74751E-05	-1.48999E-04	1.06889E-04

**\* PILE TOP DISPLACEMENTS, GLOBAL \***

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	-7.3036E-04	-2.5922E-03	-6.6071E-03	6.7475E-05	-1.4900E-04	1.0689E-04
Pile N.	1	1	4	1	1	1
MAXIMUM	3.3946E-03	-1.3777E-03	-5.6962E-03	6.7475E-05	-1.4900E-04	1.0689E-04
Pile N.	20	17	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	-1098.7	-456.36	-1553.0	23.790	3144.1	-1363.3
Pile N.	1	1	20	1	6	1
MAXIMUM	4748.9	-238.60	-959.75	23.790	4549.6	-637.37
Pile N.	20	15	6	1	20	19

**\* PILE TOP DISPLACEMENTS, LOCAL \***

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	-7.3036E-04	-2.5922E-03	-6.6071E-03	6.7475E-05	-1.4900E-04	1.0689E-04
Pile N.	1	1	4	1	1	1
MAXIMUM	3.3946E-03	-1.3777E-03	-5.6962E-03	6.7475E-05	-1.4900E-04	1.0689E-04
Pile N.	20	17	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	-1098.7	-456.36	-1553.0	23.790	3144.1	-1363.3
Pile N.	1	1	20	1	6	1
MAXIMUM	4748.9	-238.60	-959.75	23.790	4549.6	-637.37

<b>APPALDATTORE:</b> Consorzio  Soci  		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria  Mandanti  		
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>		

Pile N.            20            15            6            1            20            19

**\* 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.	-2.5922E-03	-6.6071E-03	-534.90	-1624.9	-456.35	-1553.2	-112.12	-400.14	51.069
Pile N.	1	4	1	20	1	20	1	20	5
Max.	6.3025E-05	1.6314E-04	1363.3	4549.6	115.99	392.67	27.344	98.870	1.6563E+04
Pile N.	2	12	1	20	1	20	1	20	20

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
41383.0	-6407.28	22918.3	-15820.0	1.09301E+05	59335.8

**\* 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
1.33429E-03	-1.99231E-03	6.22761E-03	-7.03752E-05	1.51878E-04	1.07093E-04

**\* PILE TOP DISPLACEMENTS, GLOBAL \***

DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	-7.5549E-04	-2.6257E-03	5.7526E-03	-7.0375E-05	1.5188E-04
Pile N.	17	17	1	1	1
MAXIMUM	3.4241E-03	-1.3589E-03	6.7027E-03	-7.0375E-05	1.5188E-04
Pile N.	4	1	4	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	-1136.4	-461.87	967.36	-24.812	-4601.9
Pile N.	17	17	14	1	4
MAXIMUM	4781.5	-236.65	1569.5	-24.812	-3170.1
Pile N.	4	7	4	1	14

**\* PILE TOP DISPLACEMENTS, LOCAL \***

DISP. X, M	DISP. Y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	-7.5549E-04	-2.6257E-03	5.7526E-03	-7.0375E-05	1.5188E-04
Pile N.	17	17	1	1	1
MAXIMUM	3.4241E-03	-1.3589E-03	6.7027E-03	-7.0375E-05	1.5188E-04
Pile N.	4	1	4	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	-1136.4	-461.87	967.36	-24.812	-4601.9
Pile N.	17	17	14	1	4
MAXIMUM	4781.5	-236.65	1569.5	-24.812	-3170.1
Pile N.	4	7	4	1	14

**\* 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.	-2.6257E-03	-1.6534E-04	-540.96	-4601.9	-461.85	-396.55	-113.24	-99.641	61.448
Pile N.	17	12	17	4	17	4	17	4	13
Max.	6.3818E-05	6.7026E-03	1382.4	1643.8	117.23	1569.8	27.568	403.63	1.6731E+04
Pile N.	18	4	17	4	17	4	17	4	4

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
34535.7	-15323.1	98.3994	-320.425	1232.99	94012.9

**\* 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
1.08259E-03	-3.93784E-03	2.52769E-05	-9.26058E-07	1.26735E-06	1.76041E-04

**\* PILE TOP DISPLACEMENTS, GLOBAL \***

DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	-1.1710E-04	-3.9462E-03	1.9026E-05	-9.2606E-07	1.2674E-06
Pile N.	17	17	1	1	1
MAXIMUM	2.2823E-03	-3.9295E-03	3.1528E-05	-9.2606E-07	1.2674E-06
Pile N.	4	1	4	1	1

APPALTATORE:

Consorzio

Soci



ITINERARIO NAPOLI – BARI

PROGETTAZIONE:

Mandataria

Mandanti



RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

PROGETTO ESECUTIVO

RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

COMMESSA IF28	LOTTO 01	CODIFICA E Z CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 350 di 354
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\* 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	-176.51	-969.47	3.0515	-0.3265	-21.529	-2624.7
Pile N.	17	20	9	1	4	20
MAXIMUM	3519.5	-652.60	7.8676	-0.3265	-8.4877	-1974.1
Pile N.	4	10	4	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	-1.1710E-04	-3.9462E-03	1.9026E-05	-9.2606E-07	1.2674E-06	1.7604E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	2.2823E-03	-3.9295E-03	3.1528E-05	-9.2606E-07	1.2674E-06	1.7604E-04
Pile N.	4	1	4	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	-176.51	-969.47	3.0515	-0.3265	-21.529	-2624.7
Pile N.	17	20	9	1	4	20
MAXIMUM	3519.5	-652.60	7.8676	-0.3265	-8.4877	-1974.1
Pile N.	4	10	4	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.	-3.9462E-03	-7.1790E-07	-1076.3	-21.529	-969.57	-2.2370	-290.27	-0.6129	80.424
Pile N.	17	11	20	4	20	4	4	4	1
Max.	1.0368E-04	3.1528E-05	2624.7	8.6473	277.95	7.8685	75.927	2.3534	9899.0
Pile N.	15	4	20	4	20	4	20	4	20

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
54152.2	251.439	98.3994	-335.232	1266.34	39807.7

\* 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
1.65904E-03	-1.03074E-04	2.21030E-05	-7.97626E-07	1.26030E-06	4.81875E-05

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X, RAD	ROT. Y, RAD	ROT. Z, RAD
MINIMUM	1.3224E-03	-1.1025E-04	1.6719E-05	-7.9763E-07	1.2603E-06	4.8187E-05
Pile N.	17	17	1	1	1	1
MAXIMUM	1.9956E-03	-9.5895E-05	2.7487E-05	-7.9763E-07	1.2603E-06	4.8187E-05
Pile N.	4	1	4	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	2172.8	9.6602	3.1051	-0.2812	-20.399	99.029
Pile N.	17	20	9	1	4	20
MAXIMUM	3202.7	14.549	7.6504	-0.2812	-8.3340	112.42
Pile N.	4	2	4	1	9	4

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. X, M	DISP. Y, M	DISP. z, M	ROT. x, RAD	ROT. y, RAD	ROT. z, RAD
MINIMUM	1.3224E-03	-1.1025E-04	1.6719E-05	-7.9763E-07	1.2603E-06	4.8187E-05
Pile N.	17	17	1	1	1	1
MAXIMUM	1.9956E-03	-9.5895E-05	2.7487E-05	-7.9763E-07	1.2603E-06	4.8187E-05
Pile N.	4	1	4	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	2172.8	9.6602	3.1051	-0.2812	-20.399	99.029
Pile N.	17	20	9	1	4	20
MAXIMUM	3202.7	14.549	7.6504	-0.2812	-8.3340	112.42
Pile N.	4	2	4	1	9	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.	-1.1025E-04	-6.1315E-07	-112.42	-20.399	-1.1694	-2.4319	-2.2512	-0.7015	1229.6
Pile N.	17	12	4	4	4	4	20	4	17
Max.	9.5147E-06	2.7487E-05	4.4183	9.1536	18.002	7.6512	5.0277	3.9790	2157.2

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>					
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   							
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>		COMMESSA <b>IF28</b>	LOTTO <b>01</b>	CODIFICA <b>E ZZ CL</b>	DOCUMENTO <b>VI0403 001</b>	REV. <b>B</b>	FOGLIO <b>351 di 354</b>

Pile N. 6 4 2 4 4 4 4 4 4 4

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
47252.1	-6407.28	22918.3	-15820.0	1.09311E+05	63717.9

\* 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
1.55465E-03	-2.02536E-03	6.25203E-03	-7.03894E-05	1.58119E-04	1.16749E-04

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	-6.5648E-04	-2.6589E-03	5.7769E-03	-7.0389E-05	1.5812E-04	1.1675E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	3.7658E-03	-1.3919E-03	6.7272E-03	-7.0389E-05	1.5812E-04	1.1675E-04
Pile N.	4	1	4	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	-987.76	-461.81	967.11	-24.817	-4595.9	-1370.3
Pile N.	17	17	14	1	4	17
MAXIMUM	4976.0	-236.43	1569.8	-24.817	-3163.1	-609.61
Pile N.	4	7	4	1	14	3

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	-6.5648E-04	-2.6589E-03	5.7769E-03	-7.0389E-05	1.5812E-04	1.1675E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	3.7658E-03	-1.3919E-03	6.7272E-03	-7.0389E-05	1.5812E-04	1.1675E-04
Pile N.	4	1	4	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	-987.76	-461.81	967.11	-24.817	-4595.9	-1370.3
Pile N.	17	17	14	1	4	17
MAXIMUM	4976.0	-236.43	1569.8	-24.817	-3163.1	-609.61
Pile N.	4	7	4	1	14	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.	-2.6589E-03	-1.6585E-04	-546.05	-4595.9	-461.80	-397.50	-113.51	-99.788	51.532
Pile N.	17	12	17	4	17	4	4	17	13
Max.	6.4316E-05	6.7272E-03	1370.3	1648.2	118.16	1570.1	27.722	403.89	1.6818E+04
Pile N.	18	4	17	4	17	4	17	4	4

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
41383.0	-6407.28	-22721.5	15159.1	-1.06812E+05	59335.1

\* 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
1.33213E-03	-1.98494E-03	-6.15165E-03	6.74751E-05	-1.48999E-04	1.06889E-04

\* PILE TOP DISPLACEMENTS, GLOBAL \*




	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	-7.3036E-04	-2.5922E-03	-6.6071E-03	6.7475E-05	-1.4900E-04	1.0689E-04
Pile N.	1	1	4	1	1	1
MAXIMUM	3.3946E-03	-1.3777E-03	-5.6962E-03	6.7475E-05	-1.4900E-04	1.0689E-04
Pile N.	20	17	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	-1098.7	-456.36	-1553.0	23.790	3144.1	-1363.3
Pile N.	1	1	20	1	6	1
MAXIMUM	4748.9	-238.60	-959.75	23.790	4549.6	-637.37
Pile N.	20	15	6	1	20	19

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	-7.3036E-04	-2.5922E-03	-6.6071E-03	6.7475E-05	-1.4900E-04	1.0689E-04
Pile N.	1	1	4	1	1	1
MAXIMUM	3.3946E-03	-1.3777E-03	-5.6962E-03	6.7475E-05	-1.4900E-04	1.0689E-04
Pile N.	20	17	1	1	1	1

<b>APPALTATORE:</b> Consorzio <b>Soci</b>   	<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>				
<b>PROGETTAZIONE:</b> Mandataria <b>Mandanti</b>   					
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>					
<b>COMMESSA</b> <b>IF28</b>	<b>LOTTO</b> <b>01</b>	<b>CODIFICA</b> <b>E Z CL</b>	<b>DOCUMENTO</b> <b>VI0403 001</b>	<b>REV.</b> <b>B</b>	<b>FOGLIO</b> <b>352 di 354</b>

MINIMUM	-7.3036E-04	-2.5922E-03	-6.6071E-03	6.7475E-05	-1.4900E-04	1.0689E-04
Pile N.	1	1	4	1	1	1
MAXIMUM	3.3946E-03	-1.3777E-03	-5.6962E-03	6.7475E-05	-1.4900E-04	1.0689E-04
Pile N.	20	17	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	-1098.7	-456.36	-1553.0	23.790	3144.1	-1363.3
Pile N.	1	1	20	1	6	1
MAXIMUM	4748.9	-238.60	-959.75	23.790	4549.6	-637.37
Pile N.	20	15	6	1	20	19

\* 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.	-2.5922E-03	-6.6071E-03	-534.90	-1624.9	-456.35	-1553.2	-112.12	-400.14	51.069
Pile N.	1	4	1	20	1	20	1	20	5
Max.	6.3025E-05	1.6314E-04	1363.3	4549.6	115.99	392.67	27.344	98.870	1.6563E+04
Pile N.	2	12	1	20	1	20	1	20	20

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
41435.8	13169.1	98.3994	-358.579	1244.66	-19231.9

\* 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
1.26078E-03	3.04631E-03	2.53758E-05	-1.34953E-06	1.15257E-06	-7.13303E-05

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	7.6893E-04	3.0342E-03	1.6266E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
Pile N.	20	17	1	1	1	1
MAXIMUM	1.7526E-03	3.0585E-03	3.4485E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
Pile N.	1	1	4	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	1265.8	569.87	3.5711	-0.4758	-21.315	1814.0
Pile N.	20	15	5	1	20	15
MAXIMUM	2877.8	826.77	7.1704	-0.4758	-9.0375	2335.3
Pile N.	1	1	20	1	5	1

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	7.6893E-04	3.0342E-03	1.6266E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
Pile N.	20	17	1	1	1	1
MAXIMUM	1.7526E-03	3.0585E-03	3.4485E-05	-1.3495E-06	1.1526E-06	-7.1330E-05
Pile N.	1	1	4	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	1265.8	569.87	3.5711	-0.4758	-21.315	1814.0
Pile N.	20	15	5	1	20	15
MAXIMUM	2877.8	826.77	7.1704	-0.4758	-9.0375	2335.3
Pile N.	1	1	20	1	5	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.	-8.3497E-05	-8.9783E-07	-2335.3	-21.315	-232.31	-2.0141	-65.875	-0.5609	716.28
Pile N.	7	12	1	20	1	20	1	20	20
Max.	3.0585E-03	3.4485E-05	881.46	8.3992	826.84	7.1707	259.49	2.1001	8676.5
Pile N.	1	4	1	20	1	20	1	20	1

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
47252.1	-36126.8	98.3994	-297.079	1254.67	1.96350E+05

\* DISPLACEMENT OF GROUPED PILE FOUNDATION AT ORIGIN \*



APPALTATORE:

Consorzio

Soci



ITINERARIO NAPOLI – BARI

PROGETTAZIONE:

Mandataria

Mandanti



RADDOPPIO TRATTA APICE – ORSARA  
I LOTTO FUNZIONALE APICE – HIRPINIA

PROGETTO ESECUTIVO

RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B

COMMESSA IF28	LOTTO 01	CODIFICA E ZZ CL	DOCUMENTO VI0403 001	REV. B	FOGLIO 353 di 354
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DISP X, M 2.10568E-03	DISP Y, M -0.0133191	DISP Z, M 3.61552E-05	ROT X,RAD -1.42109E-06	ROT Y,RAD 1.67144E-06	ROT Z,RAD 5.50991E-04
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\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	-1.6286E-03	-0.013332	2.6563E-05	-1.4211E-06	1.6714E-06	5.5099E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	5.8399E-03	-0.013306	4.5748E-05	-1.4211E-06	1.6714E-06	5.5099E-04
Pile N.	4	1	4	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	-2447.4	-2319.4	2.9132	-0.5010	-24.827	-7006.3
Pile N.	17	20	9	1	4	20
MAXIMUM	5761.6	-1535.0	8.1137	-0.5010	-8.9060	-5187.5
Pile N.	4	10	4	1	9	10

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	-1.6286E-03	-0.013332	2.6563E-05	-1.4211E-06	1.6714E-06	5.5099E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	5.8399E-03	-0.013306	4.5748E-05	-1.4211E-06	1.6714E-06	5.5099E-04
Pile N.	4	1	4	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	-2447.4	-2319.4	2.9132	-0.5010	-24.827	-7006.3
Pile N.	17	20	9	1	4	20
MAXIMUM	5761.6	-1535.0	8.1137	-0.5010	-8.9060	-5187.5
Pile N.	4	10	4	1	9	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.	-0.013332	-9.5997E-07	-2795.0	-24.827	-2319.9	-2.1479	-591.44	-0.4705	792.30
Pile N.	17	8	20	4	20	4	20	4	18
Max.	2.7692E-04	4.5748E-05	7006.3	9.6436	620.33	8.1153	135.65	2.0602	2.4399E+04
Pile N.	16	4	20	4	20	4	20	4	20

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
47252.1	-6407.28	22918.3	-15820.0	1.09311E+05	63717.2

\* 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
1.55465E-03	-2.02536E-03	6.25203E-03	-7.03895E-05	1.58119E-04	1.16748E-04

\* PILE TOP DISPLACEMENTS, GLOBAL \*

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	-6.5647E-04	-2.6589E-03	5.7769E-03	-7.0390E-05	1.5812E-04	1.1675E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	3.7658E-03	-1.3919E-03	6.7272E-03	-7.0390E-05	1.5812E-04	1.1675E-04
Pile N.	4	1	4	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	-987.75	-461.81	967.11	-24.817	-4595.9	-1370.3
Pile N.	17	17	14	1	4	17
MAXIMUM	4976.0	-236.43	1569.8	-24.817	-3163.1	-609.61
Pile N.	4	7	4	1	14	3

\* PILE TOP DISPLACEMENTS, LOCAL \*

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	-6.5647E-04	-2.6589E-03	5.7769E-03	-7.0390E-05	1.5812E-04	1.1675E-04
Pile N.	17	17	1	1	1	1
MAXIMUM	3.7658E-03	-1.3919E-03	6.7272E-03	-7.0390E-05	1.5812E-04	1.1675E-04
Pile N.	4	1	4	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	-987.75	-461.81	967.11	-24.817	-4595.9	-1370.3
Pile N.	17	17	14	1	4	17
MAXIMUM	4976.0	-236.43	1569.8	-24.817	-3163.1	-609.61
Pile N.	4	7	4	1	14	3

<b>APPALDATTORE:</b> Consorzio  Soci  		<b>ITINERARIO NAPOLI – BARI</b>  <b>RADDOPPIO TRATTA APICE – ORSARA</b> <b>I LOTTO FUNZIONALE APICE – HIRPINIA</b>
<b>PROGETTAZIONE:</b> Mandataria  Mandanti  		
<b>PROGETTO ESECUTIVO</b> <b>RELAZIONE DI CALCOLO FONDAZIONI SPALLA A E SPALLA B</b>		

Pile N.            4            7            4            1            14            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.	-2.6589E-03	-1.6585E-04	-546.05	-4595.9	-461.80	-397.50	-113.51	-99.788	51.539
Pile N.	17	12	17	4	17	4	17	4	13
Max.	6.4316E-05	6.7272E-03	1370.3	1648.2	118.16	1570.1	27.722	403.89	1.6818E+04
Pile N.	18	4	17	4	17	4	17	4	4

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
41383.0	-6407.28	-22721.5	15159.1	-1.06812E+05	59335.8

**\* 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
1.33213E-03	-1.98494E-03	-6.15165E-03	6.74751E-05	-1.48999E-04	1.06890E-04

**\* PILE TOP DISPLACEMENTS, GLOBAL \***

	DISP. X, M	DISP. Y, M	DISP. Z, M	ROT. X,RAD	ROT. Y,RAD	ROT. Z,RAD
MINIMUM	-7.3037E-04	-2.5922E-03	-6.6071E-03	6.7475E-05	-1.4900E-04	1.0689E-04
Pile N.	1	1	4	1	1	1
MAXIMUM	3.3946E-03	-1.3777E-03	-5.6962E-03	6.7475E-05	-1.4900E-04	1.0689E-04
Pile N.	20	17	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	-1098.7	-456.36	-1553.0	23.790	3144.1	-1363.3
Pile N.	1	1	20	1	6	1
MAXIMUM	4748.9	-238.60	-959.75	23.790	4549.6	-637.36
Pile N.	20	15	6	1	20	19

**\* PILE TOP DISPLACEMENTS, LOCAL \***

	DISP. x, M	DISP. y, M	DISP. z, M	ROT. x,RAD	ROT. y,RAD	ROT. z,RAD
MINIMUM	-7.3037E-04	-2.5922E-03	-6.6071E-03	6.7475E-05	-1.4900E-04	1.0689E-04
Pile N.	1	1	4	1	1	1
MAXIMUM	3.3946E-03	-1.3777E-03	-5.6962E-03	6.7475E-05	-1.4900E-04	1.0689E-04
Pile N.	20	17	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	-1098.7	-456.36	-1553.0	23.790	3144.1	-1363.3
Pile N.	1	1	20	1	6	1
MAXIMUM	4748.9	-238.60	-959.75	23.790	4549.6	-637.36
Pile N.	20	15	6	1	20	19

**\* 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.	-2.5922E-03	-6.6071E-03	-534.90	-1624.9	-456.35	-1553.2	-112.12	-400.14	51.074
Pile N.	1	4	1	20	1	20	1	20	5
Max.	6.3025E-05	1.6314E-04	1363.3	4549.6	115.99	392.67	27.344	98.870	1.6563E+04
Pile N.	2	12	1	20	1	20	1	20	20