

ISTITUTO AUTONOMO CASE POPOLARI – BRINDISI

IACP

PROGETTO COSTR. ALLOGGI POPOLARI
IN CEGLIE MESSAPICO

CONTRADA INSARTI – LOTTO 22 (COMPLET.) – 23

STRUTTURE IN C.A.
RELAZIONE DI CALCOLO
Palazzine "D-E-F"

Tav. N.

Data: 23 APR. 1994

Agg.

Rapp.

PROGETTO BASE: IACP – BRINDISI

STRUTTURE: ING. PIETRO DE LEONARDIS

IMPRESA: EDIL.SAR.TOM. – FASANO (BR)

EDIL.SAR.TOM s.r.l.
L'Amministratore Unico

VISTO
IL DIRETTORE DEI LAVORI
dott. ing. Antonio Longo

REGIONE PUGLIA
UFFICIO DEL GENIO CIVILE DI BRINDISI

Si attesta che copia del presente atto risulta depo-
sita presso questo Ufficio ai sensi della legge
n. 1086 del 5-11-1971.

BRINDISI LI

14 FUNZIONARIO ADDETTO

09 MAG. 1994

PREMESSA

Nei calcoli delle strutture in esame si è fatto riferimento alle norme tecniche di cui alla legge 5.11.1971 n.1086 ed al D.M. 14.2.1992.

Nel calcolo delle fondazioni, considerata la natura calcarea del terreno, si è assunta una tensione massima ammissibile sul terreno, pari a 0,5 N/mmq..

L'analisi dei carichi è stata eseguita ai sensi delle norme tecniche per i carichi e i sovraccarichi (D.M. 3.10.1978).

IPOTESI E PROCEDIMENTO DI CALCOLO

Nei calcoli si è seguito il metodo delle tensioni ammissibili.

Le fasi di elaborazione sono state le seguenti:

- 1) Analisi dei carichi e calcolo delle forze agenti sulle strutture.
- 2) Predimensionamento di massima delle strutture e verifica dimensionale dei solai.
- 3) Calcolo con elaboratore delle sollecitazioni agenti sulla struttura, utilizzando come programma di calcolo "Infostru" per la soluzione dei telai piani e dei telai parziali.
- 4) Progetto con elaboratore delle armature delle travi e dei pilastri utilizzando come programma di calcolo "Infostru 2". Nelle travi si è considerato un momento di campata incrementato per tener conto di imperfezioni esecutive agli incastri.
- 5) Progetto delle fondazioni assicurando il vincolo ipotizzato di incastro perfetto.

DESCRIZIONE SOMMARIA DELLE STRUTTURE

I fabbricati in esame comprendono 21 alloggi di edilizia economica e popolare

serviti da tre distinte scale, contrassegnate come D, E ed F; essi sono costituiti da un piano terra a pilotis e tre piani superiori.

La struttura è del tipo a scheletro indipendente in cemento armato. Un giunto separa i corpi di fabbrica E ed F. Il fabbricato D è a sua volta separato da giunto da altro edificio esistente.

Le fondazioni sono costituite da plinti collegati da travi-cordolo.

I solai sono del tipo con travetti precompressi con interasse di 50 cm., aventi lo spessore di cm. 20+5 di caldana collaborante.

ANALISI DEI CARICHI

SOLAIO PIANO TIPO:

carichi permanenti:

peso proprio	3.2	kN/mq.
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pavimento e sottof.	1.0	"
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intonaco soffitto	0.3	"
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incidenza tramezzi	1.0	"
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carichi accidentali:	2.5	"
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carico totale	8.0	"
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SOLAIO DI COPERTURA:

carichi permanenti:

peso proprio solaio	3.2	"
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masso a pendio	1.0	"
----------------	-----	---

intonaco	0.3	"
----------	-----	---

pavimento lastric.	1.2	"
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carichi accidentali:	2.5	"
----------------------	-----	---

carico totale	8.0	"
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SCALE:

soletta più gradini	7.0	"
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intonaco	0.3	"
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pavimento	1.2	"
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carichi accidentali	4.0	"
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carico totale	12.5	"
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MURATURE

Blocco termico alveolato

spessore cm.37	7.4	kN/ml.
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Divisori in tufella	6.2	"
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STUDIO TECNICO :	ING. PIETRO DE LEONARDIS	08/04/1994
INDIRIZZO :	VIA FORCELLA, 75	
CITTA' :	FASANO	
CANTIERE :	CEGLIE 1.2.3	

GEOMETRIA STRUTTURALE

N.ro IMPALCATI = 4 N.ro CAMPATE = 2 modulo E = 25000 N/mm²

*** GEOMETRIA DELLE TRAVI ***

* IMPALCATO *	TRAVE N.	* LUCE(m)	* BASE(cm)	* ALT.(cm)	* M. D'INERZIA(m ⁴) *
1	1	3.98	60	25	0.7813E-03
	2	3.87	60	25	0.7813E-03
2	3	3.98	60	25	0.7813E-03
	4	3.87	60	25	0.7813E-03
3	5	3.98	60	25	0.7813E-03
	6	3.87	60	25	0.7813E-03
4	7	3.98	60	25	0.7813E-03
	8	3.87	60	25	0.7813E-03

*** GEOMETRIA DEI PILASTRI ***

* PILASTRATA *	PIL. N.	* LUCE(m)	* BASE(cm)	* ALT.(cm)	* M. D'INERZIA(m ⁴) *
1	1	3.00	30	30	0.6750E-03
	4	3.00	30	30	0.6750E-03
	7	3.00	30	30	0.6750E-03
	10	3.00	30	30	0.6750E-03
2	2	3.00	30	40	0.1600E-02
	5	3.00	30	40	0.1600E-02
	8	3.00	30	30	0.6750E-03
	11	3.00	30	30	0.6750E-03
3	3	3.00	60	30	0.1350E-02
	6	3.00	60	30	0.1350E-02
	9	3.00	60	30	0.1350E-02
	12	3.00	60	30	0.1350E-02

CONDIZIONE DI CARICO

*** CARICHI NODALI ***

* IMPALCATO *	NODO *	COPPIA(KNm)	Pvert(KN) *
1	1	0.00	33.00
	3	0.00	65.00
2	4	0.00	33.00
	6	0.00	65.00
3	7	0.00	33.00
	9	0.00	65.00
4	10	0.00	33.00
	12	0.00	65.00

*** CARICHI UNIFORMI SULLE TRAVI ***

* IMPALCATO *	TRAVE N. *	Q(KN/m) *
1	1	33.00
	2	33.00
2	3	33.00
	4	33.00
3	5	33.00
	6	33.00
4	7	33.00
	8	33.00

SPOSTAMENTI DI PIANO

(unita' di misura: cm)

* IMPALC.N. *	* SPOSTAMENTO *

1	-0.009
2	-0.026
3	-0.044
4	-0.068

CARATTERISTICHE DELLA SOLLECITAZIONE

(unita' di misura: KN,m)

*** CARATTERISTICHE DELLA SOLLECITAZIONE TRAVI ***

* TRAVE N. *	Msin	Mdes	Tsin	Tdes	*
1	-33.26	47.77	62.03	69.32	
2	-46.11	33.30	67.17	60.55	
3	-35.18	46.76	62.77	68.58	
4	-45.71	34.22	66.83	60.89	
5	-36.88	45.85	63.42	67.93	
6	-45.31	35.12	66.49	61.23	
7	-27.13	50.14	59.89	71.46	
8	-49.60	27.77	69.50	58.22	

*** CARATTERISTICHE DELLA SOLLECITAZIONE PILASTRI ***

* PILASTRO N *	Msup	Minf	Tsup	Tinf	Nsup	Ninf
1	13.53	7.26	-6.93	6.93	400.35	407.10
4	18.65	19.73	-12.80	12.80	298.57	305.32
7	15.58	16.53	-10.71	10.71	196.06	202.81
10	27.13	21.31	-16.15	16.15	92.89	99.64
2	-1.13	0.61	0.18	-0.18	569.74	578.74
5	-0.63	-0.54	0.39	-0.39	424.26	433.26
8	-0.47	-0.43	0.30	-0.30	282.11	288.86
11	-0.54	-0.09	0.21	-0.21	140.95	147.70
3	-14.17	-6.10	6.76	-6.76	541.38	554.88
6	-18.08	-19.14	12.41	-12.41	402.33	415.83
9	-15.09	-16.14	10.41	-10.41	262.94	276.44
12	-27.77	-20.04	15.94	-15.94	123.22	136.72

ARMATURA TRAVI

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*-----*
*   <<<DATI DI PROGETTO>>>   *
*-----*

*-----*
*   CLS Rbk =   25   N/mm2 *
*-----*
*   Coeff. n =   15   *
*-----*
*    $\sigma_c$  amm =   8.50 N/mm2 *
*-----*
*    $\sigma_f$  amm =   220   N/mm2 *
*-----*
*    $\tau_{c0}$  =   0.53 N/mm2 *
*-----*
*    $\tau_{c1}$  =   1.69 N/mm2 *
*-----*
*   Scr.Staffe =   99   %   *
*-----*
*   Incr.Mcamp =   10   %   *
*-----*

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*** TRAVE N.ro 1 ***

<<< IMP. 1 - CAMP. 1 >>>

Luce di calcolo = 3.98 m

Base = 60 cm

Q = 33.00 KN/m

Luce netta = 3.63 m

Altezza = 25 cm

Staffe ϕ 8 a 2 bracci

Copriferro = 2.5 cm

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*   PILASTRO A SIN.   *   CAMPATA   *   PILASTRO A DES.   *
*-----*
* ASSE Pil. * FILO Pil. *           * FILO Pil. * ASSE Pil. *

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δx M<0 (m)*	0.64				0.86
x Mmax (m)*			1.87		
M calc(KNm)*	-33.26	-24.33	25.04	-34.56	-47.77
M incr(KNm)*			29.09		
F sup (cmq)*	7.56	5.44	===	7.87	10.97
F inf (cmq)*	===	===	6.56	===	3.48
σ_c (N/mm ²)*	7.37	6.08	6.77	7.57	8.50

Taglio (KN)*	57.08	62.72
Scorrim(KN)*	===	===
F pieg(cmq)*	===	===
P staffe(m)*	===	===
δ staffe(m)*	===	3.63
τ_c (N/mm ²)*	0.47	0.52

===Passo minimo Staffe = .18 m

Fmin.= 2.03 cmq

*** TRAVE N.ro 2 *** <<< IMP. 1 - CAMP. 2 >>>

Luce di calcolo = 3.87 m Base = 60 cm Q = 33.00 KN/m
 Luce netta = 3.52 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

	* PILASTRO A SIN.	* CAMPATA	* PILASTRO A DES.	*
	* ASSE Pil.	* FILO Pil.	* FILO Pil.	* ASSE Pil.
$\delta x M<0$ (m)*	0.87			0.67
x Mmax (m)*		2.03		
M calc(KNm)*	-46.11	-33.34	22.25	-24.59
M incr(KNm)*			26.22	-33.30
F sup (cmq)*	10.60	7.58	===	5.50
F inf (cmq)*	2.55	===	5.89	===
σc (N/mm ²)*	8.50	7.37	6.38	6.11
Taglio (KN)*		60.57		55.60
Scorrim(KN)*		===		===
F pieg(cmq)*		===		===
P staffe(m)*		===		===
δ staffe(m)*		===	3.52	===
τc (N/mm ²)*		0.50		0.46

===Passo minimo Staffe = .18 m

Fmin.= 2.03 cmq

*** TRAVE N.ro 3 *** <<< IMP. 2 - CAMP. 1 >>>

Luce di calcolo = 3.98 m Base = 60 cm Q = 33.00 KN/m
 Luce netta = 3.63 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

	* PILASTRO A SIN.	* CAMPATA	* PILASTRO A DES.	*
	* ASSE Pil.	* FILO Pil.	* FILO Pil.	* ASSE Pil.
$\delta x M<0$ (m)*	0.68			0.85
x Mmax (m)*		1.90		
M calc(KNm)*	-35.18	-26.14	24.51	-33.70
M incr(KNm)*			28.61	-46.76
F sup (cmq)*	8.02	5.87	===	7.66
F inf (cmq)*	===	===	6.45	===
σc (N/mm ²)*	7.64	6.34	6.71	7.44
Taglio (KN)*		57.82		61.98
Scorrim(KN)*		===		===
F pieg(cmq)*		===		===
P staffe(m)*		===		===
δ staffe(m)*		===	3.63	===
τc (N/mm ²)*		0.47		0.51

===Passo minimo Staffe = .18 m

Fmin.= 2.03 cmq

*** TRAVE N.ro 4 *** <<< IMP. 2 - CAMP. 2 >>>

Luce di calcolo = 3.87 m Base = 60 cm Q = 33.00 KN/m
 Luce netta = 3.52 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

	* PILASTRO A SIN. *	* CAMPATA *	* PILASTRO A DES. *	
	* ASSE Pil. *	* FILO Pil. *	* FILO Pil. *	* ASSE Pil. *
δx M<0 (m)*	0.87			0.69
x Mmax (m)*		2.02		
M calc(KNm)*	-45.71	-33.00	21.96	-25.46
M incr(KNm)*			25.96	-34.22
F sup (cmq)*	10.50	7.49	==	5.71
F inf (cmq)*	2.32	==	5.82	==
σc (N/mm ²)*	8.50	7.30	6.31	6.24
Taglio (KN)*		60.23		55.94
Scorrim(KN)*		==		==
F pieg(cmq)*		==		==
P staffe(m)*		==		==
δ staffe(m)*		==	3.52	==
τc (N/mm ²)*		0.49		0.46
==Passo minimo Staffe = .18 m			Fmin.= 2.03 cmq	

*** TRAVE N.ro 5 *** <<< IMP. 3 - CAMP. 1 >>>

Luce di calcolo = 3.98 m Base = 60 cm Q = 33.00 KN/m
 Luce netta = 3.68 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

	* PILASTRO A SIN. *	* CAMPATA *	* PILASTRO A DES. *	
	* ASSE Pil. *	* FILO Pil. *	* FILO Pil. *	* ASSE Pil. *
δx M<0 (m)*	0.71			0.85
x Mmax (m)*		1.92		
M calc(KNm)*	-36.88	-27.74	24.06	-36.04
M incr(KNm)*			28.20	-45.85
F sup (cmq)*	8.42	6.24	==	8.23
F inf (cmq)*	==	==	6.35	==
σc (N/mm ²)*	7.84	6.57	6.64	7.77
Taglio (KN)*		58.47		62.98
Scorrim(KN)*		==		==
F pieg(cmq)*		==		==
P staffe(m)*		==		==
δ staffe(m)*		==	3.68	==
τc (N/mm ²)*		0.48		0.52
==Passo minimo Staffe = .18 m			Fmin.= 2.03 cmq	

*** TRAVE N.ro 6 *** <<< IMP. 3 - CAMP. 2 >>>

Luce di calcolo = 3.87 m Base = 60 cm Q = 33.00 KN/m
 Luce netta = 3.57 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *
 ----------*-----*
 * ASSE Pil. * FILO Pil. * FILO Pil. * ASSE Pil. *

δx M<O (m)*	0.86			0.70
x Mmax (m)*			2.01	
M calc(KNm)*	-45.31	-35.71	21.68	-26.31
M incr(KNm)*			25.70	
F sup (cmq)*	10.41	8.14	===	5.91
F inf (cmq)*	2.10	===	5.76	===
σc (N/mm ²)*	8.50	7.70	6.28	6.38

Taglio (KN)*	61.54		56.28
Scorrim(KN)*	===		===
F pieg(cmq)*	===		===
P staffe(m)*	===	===	===
δ staffe(m)*	===	3.57	===
τc (N/mm ²)*	0.51		0.46

===Passo minimo Staffe = .18 m

Fmin.= 2.03 cmq

*** TRAVE N.ro 7 *** <<< IMP. 4 - CAMP. 1 >>>

Luce di calcolo = 3.98 m Base = 60 cm Q = 33.00 KN/m
 Luce netta = 3.68 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *
 ----------*-----*
 * ASSE Pil. * FILO Pil. * FILO Pil. * ASSE Pil. *

δx M<O (m)*	0.53			0.88
x Mmax (m)*			1.81	
M calc(KNm)*	-27.13	-18.52	27.23	-39.79
M incr(KNm)*			31.09	
F sup (cmq)*	6.10	4.09	===	9.13
F inf (cmq)*	===	===	7.04	===
σc (N/mm ²)*	6.51	5.15	7.04	8.23

Taglio (KN)*	54.94		66.51
Scorrim(KN)*	===		16.72
F pieg(cmq)*	===		===
P staffe(m)*	===	===	0.06
δ staffe(m)*	===	3.63	0.05
τc (N/mm ²)*	0.45		0.55

===Passo minimo Staffe = .18 m

Fmin.= 2.03 cmq

*** TRAVE N.ro 8 *** <<< IMP. 4 - CAMP. 2 >>>

Luce di calcolo = 3.87 m Base = 60 cm Q = 33.00 KN/m
 Luce netta = 3.57 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.91			0.56
x Mmax (m)*			2.10	
M calc(KNm)*	-49.60	-39.54	23.59	-19.41
M incr(KNm)*			27.45	
F sup (cmq)*	11.39	9.07	===	4.30
F inf (cmq)*	4.51	===	6.18	===
σc (N/mm ²)*	8.50	8.23	6.54	5.28

Taglio (KN)*	64.55		53.27
Scorrim(KN)*	===		===
F pieg(cmq)*	===		===
P staffe(m)*	===	===	===
δ staffe(m)*	===	3.57	===
τc (N/mm ²)*	0.53		0.44

===Passo minimo Staffe = .18 m

Fmin.= 2.03 cmq

ARMATURA PILASTRI

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*-----*
*   <<<DATI DI PROGETTO>>>   *
*-----*

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*-----*
*   CLS Rbk =    25    N/mm2 *
*-----*
*   Coeff. n =    15    *
*-----*
*   σc amm =    8.50 N/mm2 *
*-----*
*   σc med.amm =    5.95 N/mm2 *
*-----*
*   σf amm =    220    N/mm2 *
*-----*
*   τc0 =    0.53 N/mm2 *
*-----*

```

* P *	Base	* Alt. *	* N *	* M *	* F=F' *	* σc max *	* σf max *	* Nmax/Aci *	* Ftot *
* I *									
* L *	(cm)	(cm)	(KN)	(KNm)	(cm ²)	(N/mm ²)	(N/mm ²)	(N/mm ²)	(%A)
1	30	30	407.09	7.25	2.74	-5.50	===	-4.15	0.61
4	30	30	305.32	19.73	2.05	-7.01	12.52	-3.18	0.46
7	30	30	202.80	16.53	1.36	-5.86	21.13	-2.16	0.30
10	30	30	92.89	27.12	3.09	-8.49	216.09	-1.00	0.69
2	30	40	578.74	0.60	3.89	-4.46	===	-4.40	0.65
5	30	40	433.26	-0.53	2.91	-3.42	===	-3.37	0.49
8	30	30	288.86	-0.42	1.94	-3.10	===	-3.01	0.43
11	30	30	147.69	-0.08	1.35	-1.59	===	-1.57	0.30
3	60	30	554.87	-6.10	3.73	-3.50	===	-2.90	0.41
6	60	30	415.83	-19.14	2.80	-4.15	===	-2.21	0.31
9	60	30	276.44	-16.13	2.70	-3.11	2.92	-1.47	0.30
12	60	30	123.22	-27.77	2.77	-5.96	188.93	-0.73	0.31

STUDIO TECNICO :	ING. PIETRO DE LEONARDIS	14/04/1994
INDIRIZZO :	VIA FORCELLA, 75	
CITTA' :	FASANO	
CANTIERE :	CEGLIE 7.8.9.10.11.12	

GEOMETRIA STRUTTURALE

N.ro IMPALCATI = 4 N.ro CAMPATE = 5 modulo E = 25000 N/mm²

*** GEOMETRIA DELLE TRAVI ***

* IMPALCATO *	TRAVE N.	* LUCE(m)	* BASE(cm)	* ALT.(cm)	* M. D'INERZIA(m ⁴) *
1	1	4.03	100	25	0.1302E-02
	2	3.82	100	25	0.1302E-02
	3	3.45	100	25	0.1302E-02
	4	3.82	100	25	0.1302E-02
	5	4.03	100	25	0.1302E-02
2	6	4.03	100	25	0.1302E-02
	7	3.82	100	25	0.1302E-02
	8	3.45	100	25	0.1302E-02
	9	3.82	100	25	0.1302E-02
	10	4.03	100	25	0.1302E-02
3	11	4.03	100	25	0.1302E-02
	12	3.82	100	25	0.1302E-02
	13	3.45	100	25	0.1302E-02
	14	3.82	100	25	0.1302E-02
	15	4.03	100	25	0.1302E-02
4	16	4.03	100	25	0.1302E-02
	17	3.82	100	25	0.1302E-02
	18	3.45	100	25	0.1302E-02
	19	3.82	100	25	0.1302E-02
	20	4.03	100	25	0.1302E-02

*** GEOMETRIA DEI PILASTRI ***

* PILASTRATA *	PIL. N. *	LUCE(m) *	BASE(cm) *	ALT.(cm) *	M. D' INERZIA(m ⁴) *
1	1	3.00	50	30	0.1125E-02
	7	3.00	40	30	0.9000E-03
	13	3.00	40	30	0.9000E-03
	19	3.00	40	30	0.9000E-03
2	2	3.00	30	50	0.3125E-02
	8	3.00	30	40	0.1600E-02
	14	3.00	30	30	0.6750E-03
	20	3.00	30	30	0.6750E-03
3	3	3.00	60	30	0.1350E-02
	9	3.00	50	30	0.1125E-02
	15	3.00	40	30	0.9000E-03
	21	3.00	40	30	0.9000E-03
4	4	3.00	40	30	0.9000E-03
	10	3.00	40	30	0.9000E-03
	16	3.00	40	30	0.9000E-03
	22	3.00	40	30	0.9000E-03
5	5	3.00	30	50	0.3125E-02
	11	3.00	30	40	0.1600E-02
	17	3.00	30	30	0.6750E-03
	23	3.00	30	30	0.6750E-03
6	6	3.00	50	30	0.1125E-02
	12	3.00	40	30	0.9000E-03
	18	3.00	40	30	0.9000E-03
	24	3.00	40	30	0.9000E-03

CONDIZIONE DI CARICO

*** CARICHI NODALI ***

* IMPALCATO *	NODO *	COPPIA(KNm) *	Pvert(KN) *
1	1	0.00	62.00
	6	0.00	62.00
2	7	0.00	62.00
	12	0.00	62.00
3	13	0.00	62.00
	18	0.00	62.00
4	19	0.00	62.00
	24	0.00	62.00

*** CARICHI UNIFORMI SULLE TRAVI ***

* IMPALCATO *	TRAVE N. *	Q(KN/m) *
1	1	41.00
	2	41.00
	3	41.00
	4	41.00
	5	41.00
2	6	41.00
	7	41.00
	8	41.00
	9	41.00
	10	41.00
3	11	41.00
	12	41.00
	13	41.00
	14	41.00
	15	41.00
4	16	41.00
	17	41.00
	18	41.00
	19	41.00
	20	41.00

SPOSTAMENTI DI PIANO

(unita' di misura: cm)

* IMPALC.N. *	* SPOSTAMENTO *

1	-0.000
2	-0.001
3	-0.001
4	-0.001

CARATTERISTICHE DELLA SOLLECITAZIONE

(unita' di misura: KN,m)

*** CARATTERISTICHE DELLA SOLLECITAZIONE TRAVI ***

* TRAVE N. *	Msin	Mdes	Tsin	Tdes	*
1	-40.40	61.84	77.30	87.94	
2	-52.52	47.07	79.74	76.89	
3	-41.61	42.03	70.61	70.85	
4	-46.88	52.52	76.84	79.79	
5	-62.01	40.25	88.02	77.22	
6	-41.55	60.70	77.87	87.37	
7	-53.22	46.87	79.98	76.65	
8	-41.60	41.72	70.70	70.76	
9	-46.83	53.19	76.65	79.98	
10	-60.78	41.48	87.41	77.83	
11	-43.73	59.61	78.68	86.56	
12	-53.30	46.73	80.03	76.60	
13	-41.72	41.71	70.73	70.73	
14	-46.73	53.30	76.60	80.03	
15	-59.60	43.74	86.56	78.68	
16	-31.36	62.81	74.82	90.42	
17	-57.58	44.46	81.75	74.88	
18	-41.81	41.81	70.73	70.73	
19	-44.46	57.58	74.88	81.75	
20	-62.81	31.36	90.42	74.82	

*** CARATTERISTICHE DELLA SOLLECITAZIONE PILASTRI ***

* PILASTRO N *	Msup	Minf	Tsup	Tinf	Nsup	Ninf
1	18.54	9.32	-9.29	9.29	583.65	594.90
7	21.51	21.87	-14.46	14.46	435.36	444.36
13	19.04	20.05	-13.03	13.03	286.49	295.49
19	31.36	24.70	-18.69	18.69	136.82	145.82
2	-4.91	-2.33	2.42	-2.42	696.26	707.51
8	-5.04	-4.42	3.15	-3.15	519.59	528.59
14	-2.46	-2.46	1.64	-1.64	345.50	352.25
20	-5.24	-3.85	3.03	-3.03	172.17	178.92
3	-2.47	-1.18	1.22	-1.22	617.00	630.50
9	-2.89	-3.00	1.97	-1.97	458.26	469.51
15	-2.44	-2.38	1.61	-1.61	301.92	310.92
21	-2.65	-2.58	1.74	-1.74	145.61	154.61
4	2.02	1.05	-1.02	1.02	615.00	624.00
10	2.67	2.84	-1.84	1.84	458.32	467.32
16	2.47	2.44	-1.64	1.64	301.92	310.92
22	2.65	2.57	-1.74	1.74	145.61	154.61
5	5.01	2.63	-2.55	2.55	696.43	707.68
11	5.17	4.49	-3.22	3.22	519.63	528.63
17	2.45	2.43	-1.63	1.63	345.50	352.25
23	5.24	3.86	-3.03	3.03	172.17	178.92
6	-18.47	-9.19	9.22	-9.22	583.54	594.79
12	-21.41	-21.79	14.40	-14.40	435.32	444.32
18	-19.05	-20.08	13.05	-13.05	286.50	295.50
24	-31.36	-24.69	18.69	-18.69	136.82	145.82

ARMATURA TRAVI

```

*-----*
*   <<<DATI DI PROGETTO>>>   *
*-----*

*-----*
*   CLS Rbk =    25    N/mm2 *
*-----*
*   Coeff. n =    15    *
*-----*
*    $\sigma_c$  amm =    8.50 N/mm2 *
*-----*
*    $\sigma_f$  amm =    220    N/mm2 *
*-----*
*    $\tau_{c0}$  =    0.53 N/mm2 *
*-----*
*    $\tau_{c1}$  =    1.69 N/mm2 *
*-----*
*   Scr.Staffe =    99    %    *
*-----*
*   Incr.Mcamp =    10    %    *
*-----*

```

*** TRAVE N.ro 1 *** <<< IMP. 1 - CAMP. 1 >>>

Luce di calcolo = 4.03 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.63 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

	* PILASTRO A SIN. *	* CAMPATA *	* PILASTRO A DES. *
	* ASSE Pil. *	* FILO Pil. *	* FILO Pil. *
	* ASSE Pil. *		* ASSE Pil. *
δx M<0 (m) *	0.62		0.88
x Mmax (m) *		1.88	
M calc(KNm) *	-40.40	-29.27	32.47
M incr(KNm) *			37.58
F sup (cmq) *	9.04	6.45	9.21
F inf (cmq) *	===	===	8.38
σ_c (N/mm ²) *	6.04	4.98	5.78
			6.11
			7.90
Taglio (KN) *		71.15	77.69
Scorrim(KN) *	===		===
F pieg(cmq) *	===		===
P staffe(m) *	===		===
δ staffe(m) *	===	3.63	===
τ_c (N/mm ²) *		0.35	0.38

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 2 *** <<< IMP. 1 - CAMP. 2 >>>

Luce di calcolo = 3.82 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.42 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.84			0.77
x Mmax (m)*			1.94	
M calc(KNm)*	-52.52	-33.87	25.02	-36.00
M incr(KNm)*			30.00	
F ⁺ sup (cmq)*	11.90	7.52	===	8.01
F inf (cmq)*	===	===	6.62	===
σ (N/mm ²)*	7.11	5.45	5.05	5.64

Taglio (KN)*	69.49		70.74
Scorrim(KN)*	===		===
F pieg (cmq)*	===		===
P staffe(m)*	===	===	===
δ staffe(m)*	===	3.42	===
τ_c (N/mm ²)*	0.34		0.35

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 3 *** <<< IMP. 1 - CAMP. 3 >>>

Luce di calcolo = 3.45 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.15 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.75			0.76
x Mmax (m)*			1.72	
M calc(KNm)*	-41.61	-31.48	19.19	-31.87
M incr(KNm)*			23.37	
F sup (cmq)*	9.32	6.96	===	7.05
F inf (cmq)*	===	===	5.11	===
σ (N/mm ²)*	6.18	5.21	4.37	5.25

Taglio (KN)*	64.46		64.70
Scorrim(KN)*	===		===
F pieg (cmq)*	===		===
P staffe(m)*	===	===	===
δ staffe(m)*	===	3.15	===
τ_c (N/mm ²)*	0.32		0.32

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 4 *** <<< IMP. 1 - CAMP. 4 >>>

Luce di calcolo = 3.82 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.42 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

$\delta x M < 0$ (m)*	0.76			0.83	
x Mmax (m)*			1.87		
M calc(KNm)*	-46.88	-35.82	25.12	-33.86	-52.52
M incr(KNm)*			30.09		
F sup (cmq)*	10.56	7.97	===	7.51	11.90
F inf (cmq)*	===	===	6.64	===	===
σ (N/mm ²)*	6.64	5.61	5.06	5.45	7.11

Taglio (KN)*		70.69		69.54	
Scorrim(KN)*		===		===	
F pieg(cmq)*		===		===	
P staffe(m)*		===	===	===	
δ staffe(m)*		===	3.42	===	
τ_c (N/mm ²)*		0.35		0.34	

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 5 *** <<< IMP. 1 - CAMP. 5 >>>

Luce di calcolo = 4.03 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.63 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

$\delta x M < 0$ (m)*	0.88			0.62	
x Mmax (m)*			2.14		
M calc(KNm)*	-62.01	-41.29	32.47	-29.13	-40.25
M incr(KNm)*			37.58		
F sup (cmq)*	14.18	9.25	===	6.42	9.00
F inf (cmq)*	===	===	8.38	===	===
σ (N/mm ²)*	7.90	6.14	5.78	4.98	6.04

Taglio (KN)*		77.77		71.07	
Scorrim(KN)*		===		===	
F pieg(cmq)*		===		===	
P staffe(m)*		===	===	===	
δ staffe(m)*		===	3.63	===	
τ_c (N/mm ²)*		0.38		0.35	

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 6 *** <<< IMP. 2 - CAMP. 1 >>>

Luce di calcolo = 4.03 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.68 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

	* PILASTRO A SIN. *	* CAMPATA *	* PILASTRO A DES. *	
	* ASSE Pil. *	* FILO Pil. *	* FILO Pil. *	* ASSE Pil. *
$\delta x M < 0$ (m) *	0.64		0.87	
x Mmax (m) *		1.89		
M calc (KNm) *	-41.55	-30.34	32.39	-44.05
M incr (KNm) *		37.50		-60.70
F sup (cmq) *	9.31	6.70	===	9.89
F inf (cmq) *	===	===	8.36	===
σc (N/mm ²) *	6.18	5.08	5.78	6.38
Taglio (KN) *		71.72		79.17
Scorrim (KN) *		===		===
F pieg (cmq) *		===		===
P staffe (m) *		===		===
δ staffe (m) *		===	3.68	===
τc (N/mm ²) *		0.35		0.39
===Passo minimo Staffe = .18 m			Fmin.= 3.38 cmq	

*** TRAVE N.ro 7 *** <<< IMP. 2 - CAMP. 2 >>>

Luce di calcolo = 3.82 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.47 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

	* PILASTRO A SIN. *	* CAMPATA *	* PILASTRO A DES. *	
	* ASSE Pil. *	* FILO Pil. *	* FILO Pil. *	* ASSE Pil. *
$\delta x M < 0$ (m) *	0.85		0.76	
x Mmax (m) *		1.95		
M calc (KNm) *	-53.22	-38.04	24.79	-35.83
M incr (KNm) *		29.79		-46.87
F sup (cmq) *	12.07	8.49	===	7.97
F inf (cmq) *	===	===	6.57	===
σc (N/mm ²) *	7.17	5.84	5.05	5.61
Taglio (KN) *		71.78		70.50
Scorrim (KN) *		===		===
F pieg (cmq) *		===		===
P staffe (m) *		===		===
δ staffe (m) *		===	3.47	===
τc (N/mm ²) *		0.35		0.35
===Passo minimo Staffe = .18 m			Fmin.= 3.38 cmq	

* TRAVE N.ro 8 *** <<< IMP. 2 - CAMP. 3 >>>

ce di calcolo = 3.45 m Base = 100 cm Q = 41.00 KN/m
Luce netta = 3.15 m Altezza = 25 cm
affe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *
* ASSE Pil. * FILO Pil. * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.75			0.75	
x Mmax (m)*			1.72		
M calc(KNm)*	-41.60	-31.46	19.35	-31.57	-41.72
M incr(KNm)*			23.51		
F sup (cmq)*	9.32	6.96	===	6.98	9.35
F inf (cmq)*	===	===	5.14	===	===
σc (N/mm ²)*	6.18	5.21	4.38	5.21	6.18
Taglio (KN)*		64.55		64.61	
Scorrim(KN)*		===		===	
F pieg(cmq)*		===		===	
P staffe(m)*		===	===	===	
δ staffe(m)*		===	3.15	===	
τc (N/mm ²)*		0.32		0.32	

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

* TRAVE N.ro 9 *** <<< IMP. 2 - CAMP. 4 >>>

ce di calcolo = 3.82 m Base = 100 cm Q = 41.00 KN/m
Luce netta = 3.47 m Altezza = 25 cm
affe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *
* ASSE Pil. * FILO Pil. * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.76			0.85	
x Mmax (m)*			1.86		
M calc(KNm)*	-46.83	-35.79	24.82	-38.02	-53.19
M incr(KNm)*			29.82		
F sup (cmq)*	10.55	7.96	===	8.48	12.06
F inf (cmq)*	===	===	6.58	===	===
σc (N/mm ²)*	6.64	5.61	5.05	5.84	7.17
Taglio (KN)*		70.50		71.78	
Scorrim(KN)*		===		===	
F pieg(cmq)*		===		===	
P staffe(m)*		===	===	===	
δ staffe(m)*		===	3.47	===	
τc (N/mm ²)*		0.35		0.35	

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 10 *** <<< IMP. 2 - CAMP. 5 >>>

uce di calcolo = 4.03 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.68 m Altezza = 25 cm
 staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.87			0.64
x Mmax (m)*		2.13		
M calc(KNm)*	-60.78	-44.12	32.39	-30.27
M incr(KNm)*			37.50	
F sup (cmq)*	13.89	9.91	===	6.68
F inf (cmq)*	===	===	8.36	===
σc (N/mm ²)*	7.84	6.38	5.78	5.08

Taglio (KN)*	79.21		71.68
Scorrim(KN)*	===		===
F pieg(cmq)*	===		===
P staffe(m)*	===	===	===
δ staffe(m)*	===	3.68	===
τc (N/mm ²)*	0.39		0.35

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 11 *** <<< IMP. 3 - CAMP. 1 >>>

uce di calcolo = 4.03 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.73 m Altezza = 25 cm
 staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.67			0.86
x Mmax (m)*		1.91		
M calc(KNm)*	-43.73	-32.39	31.76	-47.08
M incr(KNm)*			36.93	
F sup (cmq)*	9.82	7.17	===	10.61
F inf (cmq)*	===	===	8.23	===
σc (N/mm ²)*	6.38	5.28	5.74	6.64

Taglio (KN)*	72.53		80.41
Scorrim(KN)*	===		===
F pieg(cmq)*	===		===
P staffe(m)*	===	===	===
δ staffe(m)*	===	3.73	===
τc (N/mm ²)*	0.36		0.40

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 12 *** <<< IMP. 3 - CAMP. 2 >>>

Luce di calcolo = 3.82 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.52 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

	* PILASTRO A SIN.	* CAMPATA	* PILASTRO A DES.	
	* ASSE Pil.	* FILO Pil.	* FILO Pil.	* ASSE Pil.
$\delta x M < 0$ (m)*	0.85			0.76
x Mmax (m)*		1.95		
M calc(KNm)*	-53.30	-41.75	24.82	-35.70 -46.73
M incr(KNm)*			29.82	
F sup (cmq)*	12.09	9.35	===	7.94 10.53
F inf (cmq)*	===	===	6.58	===
σc (N/mmq)*	7.17	6.18	5.05	5.61 6.64
Taglio (KN)*		73.88		70.45
Scorrim(KN)*		===		===
F pieg(cmq)*		===		===
P staffe(m)*		===		===
δ staffe(m)*		===	3.52	===
τc (N/mmq)*		0.36		0.35

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 13 *** <<< IMP. 3 - CAMP. 3 >>>

Luce di calcolo = 3.45 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.15 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

	* PILASTRO A SIN.	* CAMPATA	* PILASTRO A DES.	
	* ASSE Pil.	* FILO Pil.	* FILO Pil.	* ASSE Pil.
$\delta x M < 0$ (m)*	0.75			0.75
x Mmax (m)*		1.72		
M calc(KNm)*	-41.72	-31.57	19.29	-31.56 -41.71
M incr(KNm)*			23.47	
F sup (cmq)*	9.35	6.98	===	6.98 9.34
F inf (cmq)*	===	===	5.13	===
σc (N/mmq)*	6.18	5.21	4.38	5.21 6.18
Taglio (KN)*		64.58		64.58
Scorrim(KN)*		===		===
F pieg(cmq)*		===		===
P staffe(m)*		===		===
δ staffe(m)*		===	3.15	===
τc (N/mmq)*		0.32		0.32

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 14 *** <<< IMP. 3 - CAMP. 4 >>>

Luce di calcolo = 3.82 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.52 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

	* PILASTRO A SIN. *	* CAMPATA *	* PILASTRO A DES. *	
	-----	*-----*	*-----*	
	* ASSE Pil. *	* FILO Pil. *	* FILO Pil. *	* ASSE Pil. *
δx M<0 (m)*	0.76			0.85
x Mmax (m)*		1.86		
M calc(KNm)*	-46.73	-35.71	24.82	-41.76 -53.30
M incr(KNm)*			29.82	
F sup (cmq)*	10.53	7.94	==	9.36 12.09
F inf (cmq)*	==	==	6.58	== ==
σc (N/mm ²)*	6.64	5.61	5.05	6.18 7.17
Taglio (KN)*		70.45		73.88
Scorrim(KN)*		==		==
F pieg(cmq)*		==		==
P staffe(m)*		==	==	==
δ staffe(m)*		==	3.52	==
τc (N/mm ²)*		0.35		0.36
==Passo minimo Staffe = .18 m				Fmin.= 3.38 cmq

*** TRAVE N.ro 15 *** <<< IMP. 3 - CAMP. 5 >>>

Luce di calcolo = 4.03 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.73 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

	* PILASTRO A SIN. *	* CAMPATA *	* PILASTRO A DES. *	
	-----	*-----*	*-----*	
	* ASSE Pil. *	* FILO Pil. *	* FILO Pil. *	* ASSE Pil. *
δx M<0 (m)*	0.86			0.67
x Mmax (m)*		2.11		
M calc(KNm)*	-59.60	-47.08	31.76	-32.40 -43.74
M incr(KNm)*			36.93	
F sup (cmq)*	13.60	10.61	==	7.17 9.82
F inf (cmq)*	==	==	8.23	== ==
σc (N/mm ²)*	7.70	6.64	5.74	5.28 6.38
Taglio (KN)*		80.41		72.53
Scorrim(KN)*		==		==
F pieg(cmq)*		==		==
P staffe(m)*		==	==	==
δ staffe(m)*		==	3.73	==
τc (N/mm ²)*		0.40		0.36
==Passo minimo Staffe = .18 m				Fmin.= 3.38 cmq

*** TRAVE N.ro 16 *** <<< IMP. 4 - CAMP. 1 >>>

Luce di calcolo = 4.03 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.73 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

$\delta x M < 0$ (m)*	0.48			0.86	
x Mmax (m)*			1.82		
M calc(KNm)*	-31.36	-20.60	36.90	-49.71	-62.81
M incr(KNm)*			41.61		
F sup (cmq)*	6.93	4.48	==	11.24	14.37
F inf (cmq)*	==	==	9.32	==	==
σc (N/mm ²)*	5.18	4.05	6.18	6.91	7.97
Taglio (KN)*		68.67		84.27	
Scorrim(KN)*		==		==	
F pieg(cmq)*		==		==	
P staffe(m)*		==	==	==	
δ staffe(m)*		==	3.73	==	
τc (N/mm ²)*		0.34		0.42	

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 17 *** <<< IMP. 4 - CAMP. 2 >>>

Luce di calcolo = 3.82 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.52 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

$\delta x M < 0$ (m)*	0.91			0.74	
x Mmax (m)*			1.99		
M calc(KNm)*	-57.58	-45.78	23.92	-33.69	-44.46
M incr(KNm)*			29.02		
F sup (cmq)*	13.12	10.30	==	7.47	9.99
F inf (cmq)*	==	==	6.40	==	==
σc (N/mm ²)*	7.57	6.54	4.95	5.41	6.44
Taglio (KN)*		75.60		68.73	
Scorrim(KN)*		==		==	
F pieg(cmq)*		==		==	
P staffe(m)*		==	==	==	
δ staffe(m)*		==	3.52	==	
τc (N/mm ²)*		0.37		0.34	

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 18 *** <<< IMP. 4 - CAMP. 3 >>>

Luce di calcolo = 3.45 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.15 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *
 ----------*-----*
 * ASSE Pil. * FILO Pil. * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.75			0.75
x Mmax (m)*			1.72	
M calc(KNm)*	-41.81	-31.67	19.20	-31.67
M incr(KNm)*			23.38	
F sup (cmq)*	9.37	7.01	===	7.01
F inf (cmq)*	===	===	5.11	===
σc (N/mm ²)*	6.18	5.21	4.37	5.21

Taglio (KN)*	64.58		64.58
Scorrim(KN)*	===		===
F pieg(cmq)*	===		===
P staffe(m)*	===	===	===
δ staffe(m)*	===	3.15	===
τc (N/mm ²)*	0.32		0.32

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 19 *** <<< IMP. 4 - CAMP. 4 >>>

Luce di calcolo = 3.82 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.52 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *
 ----------*-----*
 * ASSE Pil. * FILO Pil. * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.74			0.91
x Mmax (m)*			1.82	
M calc(KNm)*	-44.46	-33.69	23.92	-45.78
M incr(KNm)*			29.02	
F sup (cmq)*	9.99	7.47	===	10.30
F inf (cmq)*	===	===	6.40	===
σc (N/mm ²)*	6.44	5.41	4.95	6.54

Taglio (KN)*	68.73		75.60
Scorrim(KN)*	===		===
F pieg(cmq)*	===		===
P staffe(m)*	===	===	===
δ staffe(m)*	===	3.52	===
τc (N/mm ²)*	0.34		0.37

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 20 *** <<< IMP. 4 - CAMP. 5 >>>

Luce di calcolo = 4.03 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.73 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.86			0.48
x Mmax (m)*			2.20	
M calc(KNm)*	-62.81	-49.71	36.90	-20.60
M incr(KNm)*			41.61	
F sup (cmq)*	14.37	11.24	==	4.48
F inf (cmq)*	==	==	9.32	==
σc (N/mm ²)*	7.97	6.91	6.18	4.05

Taglio (KN)*	84.27		68.67
Scorrim(KN)*	==		==
F pieg(cmq)*	==		==
P staffe(m)*	==	==	==
δ staffe(m)*	==	3.73	==
τc (N/mm ²)*	0.42		0.34

==Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

ARMATURA PILASTRI

```

*-----*
*   <<<DATI DI PROGETTO>>>   *
*-----*

*-----*
*   CLS Rbk =    25    N/mm2 *
*-----*
*   Coeff. n =    15    *
*-----*
*    $\sigma_c$  amm =    8.50 N/mm2 *
*-----*
*    $\sigma_c$  med. amm =    5.95 N/mm2 *
*-----*
*    $\sigma_f$  amm =    220    N/mm2 *
*-----*
*    $\tau_{c0}$  =    0.53 N/mm2 *
*-----*

```

* P *	Base	* Alt. *	* N *	* M *	* F=F' *	* σ_c max *	* σ_f max *	* Nmax/Aci *	* Ftot *
* I *									
* L *	(cm)	(cm)	(KN)	(KNm)	(cmq)	(N/mm ²)	(N/mm ²)	(N/mm ²)	(%A)
1	50	30	594.90	9.31	4.00	-4.74	===	-3.67	0.53
7	40	30	444.35	21.86	2.99	-6.60	===	-3.45	0.50
13	40	30	295.49	20.05	1.99	-5.37	23.18	-2.35	0.33
19	40	30	136.81	31.36	2.88	-8.50	218.81	-1.13	0.48
2	30	50	707.51	-2.33	4.76	-4.46	===	-4.31	0.63
8	30	40	528.58	-4.41	3.55	-4.50	===	-4.05	0.59
14	30	30	352.25	-2.46	2.37	-4.10	===	-3.63	0.53
20	30	30	178.91	-3.85	1.35	-2.68	===	-1.90	0.30
3	60	30	630.49	-1.18	4.24	-3.39	===	-3.27	0.47
9	50	30	469.51	-3.00	3.16	-3.30	===	-2.94	0.42
15	40	30	310.92	-2.37	2.09	-2.82	===	-2.46	0.35
21	40	30	154.60	-2.57	1.80	-1.62	===	-1.23	0.30
4	40	30	624.00	1.04	4.19	-4.85	===	-4.71	0.70
10	40	30	467.32	2.83	3.14	-4.02	===	-3.61	0.52
16	40	30	310.91	2.44	2.09	-2.83	===	-2.46	0.35
22	40	30	154.60	2.56	1.80	-1.62	===	-1.23	0.30
5	30	50	707.67	2.62	4.76	-4.48	===	-4.31	0.63
11	30	40	528.62	4.49	3.55	-4.51	===	-4.05	0.59
17	30	30	352.24	2.42	2.37	-4.09	===	-3.63	0.53
23	30	30	178.91	3.85	1.35	-2.69	===	-1.90	0.30
6	50	30	594.78	-9.19	4.00	-4.72	===	-3.67	0.53
12	40	30	444.32	-21.79	2.99	-6.59	===	-3.45	0.50
18	40	30	295.49	-20.08	1.99	-5.38	23.48	-2.35	0.33

P	Base	Alt.	N	M	F=F'	σ_c max	σ_f max	Nmax/Aci	Ftot
I									
L	(cm)	(cm)	(KN)	(KNm)	(cmq)	(N/mm ²)	(N/mm ²)	(N/mm ²)	(%A)
24	40	30	136.81	-31.36	2.88	-8.50	218.80	-1.13	0.48

STUDIO TECNICO : ING. PIETRO DE LEONARDIS

15/04/1994

INDIRIZZO : VIA FORCELLA, 75

CITTA' : FASANO

CANTIERE : CEGLIE 1.2.3.4 E

GEOMETRIA STRUTTURALE

N.ro IMPALCATI = 4

N.ro CAMPATE = 3

modulo E = 25000 N/mm²

*** GEOMETRIA DELLE TRAVI ***

* IMPALCATO *	TRAVE N.	* LUCE(m)	* BASE(cm)	* ALT.(cm)	* M. D'INERZIA(m ⁴) *
1	1	3.40	60	25	0.7813E-03
	2	3.60	60	25	0.7813E-03
	3	3.35	90	25	0.1172E-02
2	4	3.40	60	25	0.7813E-03
	5	3.60	60	25	0.7813E-03
	6	3.35	90	25	0.1172E-02
3	7	3.40	60	25	0.7813E-03
	8	3.60	60	25	0.7813E-03
	9	3.35	90	25	0.1172E-02
4	10	3.40	60	25	0.7813E-03
	11	3.60	60	25	0.7813E-03
	12	3.35	90	25	0.1172E-02

*** GEOMETRIA DEI PILASTRI ***

* PILASTRATA *	PIL. N. *	LUCE(m) *	BASE(cm) *	ALT. (cm) *	M. D' INERZIA(m ⁴) *
1	1	3.00	30	30	0.6750E-03
	5	3.00	30	30	0.6750E-03
	9	3.00	30	30	0.6750E-03
	13	3.00	30	30	0.6750E-03
2	2	3.00	40	30	0.9000E-03
	6	3.00	40	30	0.9000E-03
	10	3.00	30	30	0.6750E-03
	14	3.00	30	30	0.6750E-03
3	3	3.00	40	30	0.9000E-03
	7	3.00	40	30	0.9000E-03
	11	3.00	30	30	0.6750E-03
	15	3.00	30	30	0.6750E-03
4	4	3.00	60	30	0.1350E-02
	8	3.00	60	30	0.1350E-02
	12	3.00	60	30	0.1350E-02
	16	3.00	60	30	0.1350E-02

CONDIZIONE DI CARICO

*** CARICHI NODALI ***

* IMPALCATO *	NODO *	COPPIA(KNm) *	Pvert(KN) *
1	1	0.00	33.00
	4	0.00	65.00
2	5	0.00	33.00
	8	0.00	65.00
3	9	0.00	33.00
	12	0.00	65.00
4	13	0.00	33.00
	16	0.00	65.00

*** CARICHI UNIFORMI SULLE TRAVI ***

* IMPALCATO *	TRAVE N. *	Q(KN/m) *
1	1	32.00
	2	32.00
	3	34.00
2	4	32.00
	5	32.00
	6	34.00
3	7	32.00
	8	32.00
	9	34.00
4	10	32.00
	11	32.00
	12	34.00

SPOSTAMENTI DI PIANO

(unita' di misura: cm)

* IMPALC.N. *	* SPOSTAMENTO *

1	-0.002
2	-0.007
3	-0.012
4	-0.019

CARATTERISTICHE DELLA SOLLECITAZIONE

(unita' di misura: KN,m)

*** CARATTERISTICHE DELLA SOLLECITAZIONE TRAVI ***

* TRAVE N. *	Msin	Mdes	Tsin	Tdes	*
1	-22.05	34.94	50.61	58.20	
2	-34.87	34.47	57.72	57.49	
3	-35.72	23.76	60.53	53.38	
4	-23.39	34.37	51.18	57.63	
5	-34.82	34.40	57.72	57.49	
6	-35.36	24.81	60.10	53.81	
7	-24.42	34.09	51.56	57.25	
8	-34.69	34.22	57.73	57.48	
9	-35.37	25.57	59.88	54.03	
10	-17.66	36.22	48.95	59.86	
11	-35.53	34.91	57.78	57.43	
12	-36.71	19.32	62.14	51.77	

*** CARATTERISTICHE DELLA SOLLECITAZIONE PILASTRI ***

* PILASTRO N *	Msup	* Minf	* Tsup	* Tinf	* Nsup	* Ninf	*
1	9.05	4.66	-4.57	4.57	354.53	361.28	
5	12.33	13.01	-8.45	8.45	264.17	270.92	
9	10.49	11.07	-7.19	7.19	173.25	180.00	
13	17.66	13.94	-10.53	10.53	81.95	88.70	
2	-0.13	0.12	0.01	-0.01	486.36	495.36	
6	0.14	0.06	-0.07	0.07	361.46	370.46	
10	0.48	0.33	-0.27	0.27	239.36	246.11	
14	-0.70	0.13	0.19	-0.19	117.63	124.38	
3	0.48	0.42	-0.30	0.30	495.01	504.01	
7	0.69	0.78	-0.49	0.49	368.00	377.00	
11	0.12	0.29	-0.14	0.14	243.67	250.42	
15	1.80	1.04	-0.95	0.95	119.57	126.32	
4	-9.90	-4.69	4.86	-4.86	513.47	526.97	
8	-13.12	-13.86	8.99	-8.99	381.59	395.09	
12	-11.04	-11.70	7.58	-7.58	249.29	262.79	
16	-19.32	-14.54	11.29	-11.29	116.77	130.27	

ARMATURA TRAVI

```

*-----*
*   <<<DATI DI PROGETTO>>>   *
*-----*

*-----*
*   CLS Rbk =    25    N/mm2 *
*-----*
*   Coeff. n =    15    *
*-----*
*    $\sigma$  amm =    8.50 N/mm2 *
*-----*
*    $\sigma$  f amm =    220    N/mm2 *
*-----*
*    $\tau$  c0 =    0.53 N/mm2 *
*-----*
*    $\tau$  c1 =    1.69 N/mm2 *
*-----*
*   Scr.Staffe =    99    %   *
*-----*
*   Incr.Mcamp =    10    %   *
*-----*

```

*** TRAVE N.ro 1 *** <<< IMP. 1 - CAMP. 1 >>>

Luce di calcolo = 3.40 m Base = 60 cm Q = 32.00 KN/m
 Luce netta = 3.10 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

```

*-----*
*   PILASTRO A SIN.   *   CAMPATA   *   PILASTRO A DES.   *
*-----*
*   ASSE Pil. * FILO Pil. *   *   FILO Pil. * ASSE Pil. *
*-----*

```

δx M<0 (m)*	0.52			0.75
x Mmax (m)*			1.58	
M calc(KNm)*	-22.05	-14.82	17.98	-26.58
M incr(KNm)*			20.83	
F sup (cmq)*	4.91	3.24	===	5.97
F inf (cmq)*	===	===	4.62	===
σ (N/mm ²)*	5.71	4.52	5.51	6.41
Taglio (KN)*		45.81		53.40
Scorrim(KN)*		===		===
F pieg(cmq)*		===		===
P staffe(m)*		===	===	===
δ staffe(m)*		===	3.10	===
τ c (N/mm ²)*		0.38		0.44

===Passo minimo Staffe = .18 m

Fmin.= 2.03 cmq

*** TRAVE N.ro 2 *** <<< IMP. 1 - CAMP. 2 >>>

Luce di calcolo = 3.60 m Base = 60 cm Q = 32.00 KN/m
 Luce netta = 3.30 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

$\delta x M<0$ (m)*	0.76			0.76	
x Mmax (m)*			1.80		
M calc(KNm)*	-34.87	-26.58	17.18	-26.21	-34.47
M incr(KNm)*			20.64		
F sup (cmq)*	7.94	5.97	===	5.88	7.85
F inf (cmq)*	===	===	4.58	===	===
σc (N/mmq)*	7.57	6.41	5.48	6.34	7.57
Taglio (KN)*		52.92		52.69	
Scorrim(KN)*		===		===	
F pieg(cmq)*		===		===	
P staffe(m)*		===	===	===	
δ staffe(m)*		===	3.29	===	
τc (N/mmq)*		0.44		0.43	

===Passo minimo Staffe = .18 m

Fmin.= 2.03 cmq

*** TRAVE N.ro 3 *** <<< IMP. 1 - CAMP. 3 >>>

Luce di calcolo = 3.35 m Base = 90 cm Q = 34.00 KN/m
 Luce netta = 3.05 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

$\delta x M<0$ (m)*	0.74			0.53	
x Mmax (m)*			1.78		
M calc(KNm)*	-35.72	-27.03	18.15	-16.14	-23.76
M incr(KNm)*			21.13		
F sup (cmq)*	7.98	5.97	===	3.49	5.22
F inf (cmq)*	===	===	4.62	===	===
σc (N/mmq)*	5.98	5.05	4.38	3.73	4.68
Taglio (KN)*		55.43		48.28	
Scorrim(KN)*		===		===	
F pieg(cmq)*		===		===	
P staffe(m)*		===	===	===	
δ staffe(m)*		===	3.04	===	
τc (N/mmq)*		0.30		0.26	

===Passo minimo Staffe = .18 m

Fmin.= 3.04 cmq

*** TRAVE N.ro 4 *** <<< IMP. 2 - CAMP. 1 >>>

Luce di calcolo = 3.40 m Base = 60 cm Q = 32.00 KN/m
 Luce netta = 3.10 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

$\delta x M < 0$ (m)*	0.55			0.75	
x Mmax (m)*			1.59		
M calc(KNm)*	-23.39	-16.07	17.53	-26.08	-34.37
M incr(KNm)*			20.42		
F sup (cmq)*	5.22	3.53	===	5.85	7.82
F inf (cmq)*	===	===	4.53	===	===
σc (N/mm ²)*	5.91	4.71	5.45	6.34	7.50

Taglio (KN)*		46.38		52.83	
Scorrim(KN)*		===		===	
F pieg(cmq)*		===		===	
P staffe(m)*		===	===	===	
δ staffe(m)*		===	3.10	===	
τc (N/mm ²)*		0.38		0.43	

===Passo minimo Staffe = .18 m Fmin.= 2.03 cmq

*** TRAVE N.ro 5 *** <<< IMP. 2 - CAMP. 2 >>>

Luce di calcolo = 3.60 m Base = 60 cm Q = 32.00 KN/m
 Luce netta = 3.30 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

$\delta x M < 0$ (m)*	0.76			0.75	
x Mmax (m)*			1.80		
M calc(KNm)*	-34.82	-26.53	17.24	-26.13	-34.40
M incr(KNm)*			20.70		
F sup (cmq)*	7.93	5.96	===	5.86	7.83
F inf (cmq)*	===	===	4.60	===	===
σc (N/mm ²)*	7.57	6.41	5.51	6.34	7.50

Taglio (KN)*		52.92		52.69	
Scorrim(KN)*		===		===	
F pieg(cmq)*		===		===	
P staffe(m)*		===	===	===	
δ staffe(m)*		===	3.29	===	
τc (N/mm ²)*		0.44		0.43	

===Passo minimo Staffe = .18 m Fmin.= 2.03 cmq

*** TRAVE N.ro 6 *** <<< IMP. 2 - CAMP. 3 >>>

Luce di calcolo = 3.35 m Base = 90 cm Q = 34.00 KN/m
 Luce netta = 3.05 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.74			0.56	
x Mmax (m)*			1.76		
M calc(KNm)*	-35.36	-26.73	17.77	-17.12	-24.81
M incr(KNm)*			20.77		
F sup (cmq)*	7.90	5.90	==	3.71	5.46
F inf (cmq)*	==	==	4.54	==	==
σc (N/mm ²)*	5.94	5.01	4.33	3.87	4.81

Taglio (KN)*	55.00		48.71	
Scorrim(KN)*	==		==	
F pieg(cmq)*	==		==	
P staffe(m)*	==	==	==	
δ staffe(m)*	==	3.04	==	
τc (N/mm ²)*	0.30		0.27	

===Passo minimo Staffe = .18 m

Fmin.= 3.04 cmq

*** TRAVE N.ro 7 *** <<< IMP. 3 - CAMP. 1 >>>

Luce di calcolo = 3.40 m Base = 60 cm Q = 32.00 KN/m
 Luce netta = 3.10 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.57			0.75	
x Mmax (m)*			1.61		
M calc(KNm)*	-24.42	-17.05	17.12	-25.86	-34.09
M incr(KNm)*			20.05		
F sup (cmq)*	5.46	3.75	==	5.80	7.76
F inf (cmq)*	==	==	4.44	==	==
σc (N/mm ²)*	6.08	4.90	5.38	6.31	7.50

Taglio (KN)*	46.76		52.45	
Scorrim(KN)*	==		==	
F pieg(cmq)*	==		==	
P staffe(m)*	==	==	==	
δ staffe(m)*	==	3.10	==	
τc (N/mm ²)*	0.38		0.43	

===Passo minimo Staffe = .18 m

Fmin.= 2.03 cmq

*** TRAVE N.ro 8 *** <<< IMP. 3 - CAMP. 2 >>>

Luce di calcolo = 3.60 m Base = 60 cm Q = 32.00 KN/m
 Luce netta = 3.30 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.76			0.75	
x Mmax (m)*			1.80		
M calc(KNm)*	-34.69	-26.39	17.39	-25.96	-34.22
M incr(KNm)*			20.84		
F sup (cmq)*	7.90	5.93	===	5.82	7.79
F inf (cmq)*	===	===	4.63	===	===
σc (N/mmq)*	7.57	6.38	5.51	6.31	7.50
Taglio (KN)*		52.93		52.68	
Scorrim(KN)*		===		===	
F pieg(cmq)*		===		===	
P staffe(m)*		===	===	===	
δ staffe(m)*		===	3.29	===	
τc (N/mmq)*		0.44		0.43	

===Passo minimo Staffe = .18 m

Fmin.= 2.03 cmq

*** TRAVE N.ro 9 *** <<< IMP. 3 - CAMP. 3 >>>

Luce di calcolo = 3.35 m Base = 90 cm Q = 34.00 KN/m
 Luce netta = 3.05 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.75			0.57	
x Mmax (m)*			1.76		
M calc(KNm)*	-35.37	-26.77	17.36	-17.85	-25.57
M incr(KNm)*			20.41		
F sup (cmq)*	7.90	5.91	===	3.88	5.63
F inf (cmq)*	===	===	4.45	===	===
σc (N/mmq)*	5.94	5.03	4.28	3.97	4.88
Taglio (KN)*		54.78		48.93	
Scorrim(KN)*		===		===	
F pieg(cmq)*		===		===	
P staffe(m)*		===	===	===	
δ staffe(m)*		===	3.04	===	
τc (N/mmq)*		0.30		0.27	

===Passo minimo Staffe = .18 m

Fmin.= 3.04 cmq

*** TRAVE N.ro 10 *** <<< IMP. 4 - CAMP. 1 >>>

Luce di calcolo = 3.40 m Base = 60 cm Q = 32.00 KN/m
 Luce netta = 3.10 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.41			0.75
x Mmax (m)*			1.52	
M calc(KNm)*	-17.66	-10.68	19.78	-27.60
M incr(KNm)*			22.47	
F sup (cmq)*	3.89	2.31	===	6.21
F inf (cmq)*	===	===	5.01	===
σc (N/mm ²)*	5.00	3.72	5.78	6.57

Taglio (KN)*		44.15		55.06
Scorrim(KN)*		===		===
F pieg(cmq)*		===		===
P staffe(m)*		===	===	===
δ staffe(m)*		===	3.10	===
τc (N/mm ²)*		0.36		0.45

===Passo minimo Staffe = .18 m

Fmin.= 2.03 cmq

*** TRAVE N.ro 11 *** <<< IMP. 4 - CAMP. 2 >>>

Luce di calcolo = 3.60 m Base = 60 cm Q = 32.00 KN/m
 Luce netta = 3.30 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.78			0.77
x Mmax (m)*			1.80	
M calc(KNm)*	-35.53	-27.22	16.63	-26.66
M incr(KNm)*			20.15	
F sup (cmq)*	8.10	6.12	===	5.99
F inf (cmq)*	===	===	4.47	===
σc (N/mm ²)*	7.70	6.51	5.41	6.44

Taglio (KN)*		52.98		52.63
Scorrim(KN)*		===		===
F pieg(cmq)*		===		===
P staffe(m)*		===	===	===
δ staffe(m)*		===	3.29	===
τc (N/mm ²)*		0.44		0.43

===Passo minimo Staffe = .18 m

Fmin.= 2.03 cmq

*** TRAVE N.ro 12 *** <<< IMP. 4 - CAMP. 3 >>>

Luce di calcolo = 3.35 m Base = 90 cm Q = 34.00 KN/m
 Luce netta = 3.05 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.74				0.43
x Mmax (m)*			1.82		
M calc(KNm)*	-36.71	-27.77	20.09	-11.94	-19.32
M incr(KNm)*			22.89		
F sup (cmq)*	8.22	6.14	===	2.56	4.21
F inf (cmq)*	===	===	5.02	===	===
σc (N/mmq)*	6.11	5.15	4.58	3.15	4.15
Taglio (KN)*		57.04		46.67	
Scorrim(KN)*		===		===	
F pieg(cmq)*		===		===	
P staffe(m)*		===	===	===	
δ staffe(m)*		===	3.04	===	
τc (N/mmq)*		0.31		0.26	

===Passo minimo Staffe = .18 m

Fmin.= 3.04 cmq

ARMATURA PILASTRI

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*-----*
*   <<<DATI DI PROGETTO>>>   *
*-----*

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```

*-----*
*   CLS Rbk =    25    N/mm2 *
*-----*
*   Coeff. n =    15    *
*-----*
*   σc amm =    8.50 N/mm2 *
*-----*
*   σc med.amm =    5.95 N/mm2 *
*-----*
*   σf amm =    220    N/mm2 *
*-----*
*   τc0 =    0.53 N/mm2 *
*-----*

```

* P *	Base	* Alt. *	* N *	* M *	* F=F' *	* σc max *	* σf max *	* Nmax/Aci *	* Ftot *
* I *									
* L *	(cm)	(cm)	(KN)	(KNm)	(cmq)	(N/mm ²)	(N/mm ²)	(N/mm ²)	(%A)
1	30	30	361.28	4.66	2.43	-4.60	===	-3.71	0.54
5	30	30	270.92	13.00	1.82	-5.40	===	-2.84	0.40
9	30	30	180.00	11.06	1.35	-4.16	8.25	-1.91	0.30
13	30	30	81.94	17.65	1.50	-7.30	213.97	-0.94	0.33
2	40	30	495.35	0.12	3.33	-3.83	===	-3.81	0.56
6	40	30	370.45	0.05	2.49	-2.91	===	-2.91	0.42
10	30	30	246.10	0.32	1.65	-2.66	===	-2.59	0.37
14	30	30	124.38	0.13	1.35	-1.35	===	-1.32	0.30
3	40	30	504.00	0.41	3.39	-3.93	===	-3.87	0.56
7	40	30	376.99	0.78	2.53	-3.07	===	-2.95	0.42
11	30	30	250.41	0.28	1.68	-2.69	===	-2.63	0.37
15	30	30	126.32	1.03	1.35	-1.55	===	-1.34	0.30
4	60	30	526.97	-4.68	3.54	-3.23	===	-2.76	0.39
8	60	30	395.09	-13.86	2.70	-3.51	===	-2.10	0.30
12	60	30	262.79	-11.69	2.70	-2.59	===	-1.40	0.30
16	60	30	130.26	-14.53	2.70	-2.67	28.54	-0.69	0.30

STUDIO TECNICO :	ING. PIETRO DE LEONARDIS	16/04/1994
INDIRIZZO :	VIA FORCELLA, 75	
CITTA' :	FASANO	
CANTIERE :	CEGLIE 5.6.7 E	

GEOMETRIA STRUTTURALE

 N.ro IMPALCATI = 4 N.ro CAMPATE = 2 modulo E = 25000 N/mm²

 *** GEOMETRIA DELLE TRAVI ***

* IMPALCATO *	* TRAVE N. *	* LUCE(m) *	* BASE(cm) *	* ALT.(cm) *	* M. D'INERZIA(m ⁴) *
1	1	3.92	60	25	0.7813E-03
	2	3.93	60	25	0.7813E-03
2	3	3.92	60	25	0.7813E-03
	4	3.93	60	25	0.7813E-03
3	5	3.92	60	25	0.7813E-03
	6	3.93	60	25	0.7813E-03
4	7	3.92	60	25	0.7813E-03
	8	3.93	60	25	0.7813E-03

*** GEOMETRIA DEI PILASTRI ***

* PILASTRATA *	PIL. N.	* LUCE(m)	* BASE(cm)	* ALT.(cm)	* M. D' INERZIA(m ⁴) *
1	1	3.00	60	30	0.1350E-02
	4	3.00	60	30	0.1350E-02
	7	3.00	60	30	0.1350E-02
	10	3.00	60	30	0.1350E-02
2	2	3.00	40	30	0.9000E-03
	5	3.00	40	30	0.9000E-03
	8	3.00	30	30	0.6750E-03
	11	3.00	30	30	0.6750E-03
3	3	3.00	30	30	0.6750E-03
	6	3.00	30	30	0.6750E-03
	9	3.00	30	30	0.6750E-03
	12	3.00	30	30	0.6750E-03

CONDIZIONE DI CARICO

*** CARICHI NODALI ***

* IMPALCATO *	NODO *	COPPIA(KNm) *	Pvert(KN) *
1	1	0.00	102.00
	3	0.00	33.00
2	4	0.00	102.00
	6	0.00	33.00
3	7	0.00	102.00
	9	0.00	33.00
4	10	0.00	139.00
	12	0.00	33.00

*** CARICHI UNIFORMI SULLE TRAVI ***

* IMPALCATO *	TRAVE N. *	Q(KN/m) *
1	1	32.00
	2	32.00
2	3	32.00
	4	32.00
3	5	32.00
	6	32.00
4	7	32.00
	8	32.00

SPOSTAMENTI DI PIANO

(unita' di misura: cm)

* IMPALC.N. *	* SPOSTAMENTO *

1	0.010
2	0.029
3	0.048
4	0.077

CARATTERISTICHE DELLA SOLLECITAZIONE

(unita' di misura: KN,m)

*** CARATTERISTICHE DELLA SOLLECITAZIONE TRAVI ***

* TRAVE N. *	Msin	Mdes	Tsin	Tdes	*
1	-33.25	45.64	59.56	65.89	
2	-45.30	31.39	66.42	59.35	
3	-34.13	45.21	59.90	65.55	
4	-44.37	33.25	65.71	60.06	
5	-34.96	44.85	60.20	65.25	
6	-43.47	34.93	65.06	60.71	
7	-27.80	48.71	57.39	68.06	
8	-47.86	25.59	68.55	57.22	

*** CARATTERISTICHE DELLA SOLLECITAZIONE PILASTRI ***

* PILASTRO N *	Msup	* Minf	* Tsup	* Tinf	* Nsup	* Ninf	*
1	14.15	6.01	-6.72	6.72	722.54	736.04	
4	18.10	19.11	-12.41	12.41	547.48	560.98	
7	15.04	16.03	-10.36	10.36	372.09	385.59	
10	27.80	19.92	-15.91	15.91	196.39	209.89	
2	0.16	-0.64	0.16	-0.16	552.96	561.96	
5	-0.49	-0.50	0.33	-0.33	411.66	420.66	
8	-0.32	-0.36	0.23	-0.23	273.65	280.40	
11	-0.86	-1.07	0.65	-0.65	136.61	143.36	
3	-12.76	-6.92	6.56	-6.56	389.57	396.32	
6	-17.59	-18.64	12.08	-12.08	290.48	297.23	
9	-14.73	-15.66	10.13	-10.13	190.68	197.43	
12	-25.59	-20.20	15.27	-15.27	90.22	96.97	

ARMATURA TRAVI

```

*-----*
* <<<DATI DI PROGETTO>>> *
*-----*

*-----*
*   CLS Rbk =   25   N/mm2 *
*-----*
*   Coeff. n =   15   *
*-----*
*    $\sigma_c$  amm =   8.50 N/mm2 *
*-----*
*    $\sigma_f$  amm =  220   N/mm2 *
*-----*
*    $\tau_{c0}$  =   0.53 N/mm2 *
*-----*
*    $\tau_{c1}$  =   1.69 N/mm2 *
*-----*
*   Scr.Staffe =   99   %   *
*-----*
*   Incr.Mcamp =   10   %   *
*-----*

```

*** TRAVE N.ro 1 *** <<< IMP. 1 - CAMP. 1 >>>

Luce di calcolo = 3.92 m Base = 60 cm Q = 32.00 KN/m
 Luce netta = 3.62 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

```

*   PILASTRO A SIN.   *   CAMPATA   *   PILASTRO A DES.   *
*-----*
* ASSE Pil. * FILO Pil. *           * FILO Pil. * ASSE Pil. *

```

$\delta x M < 0$ (m)*	0.68				0.88
x Mmax (m)*			1.86		
M calc(KNm)*	-33.25	-24.67	22.19	-36.12	-45.64
M incr(KNm)*			26.13		
F sup (cmq)*	7.56	5.52	===	8.24	10.49
F inf (cmq)*	===	===	5.86	===	2.28
σ_c (N/mm ²)*	7.37	6.11	6.34	7.77	8.50
Taglio (KN)*		54.76		61.09	
Scorrim(KN)*		===		===	
F pieg(cmq)*		===		===	
P staffe(m)*		===	===	===	
δ staffe(m)*		===	3.62	===	
τ_c (N/mm ²)*		0.45		0.50	

===Passo minimo Staffe = .18 m

Fmin.= 2.03 cmq

*** TRAVE N.ro 2 *** <<< IMP. 1 - CAMP. 2 >>>

Luce di calcolo = 3.93 m Base = 60 cm Q = 32.00 KN/m
 Luce netta = 3.63 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.86			0.63
x Mmax (m)*			2.07	
M calc(KNm)*	-45.30	-35.70	23.64	-22.85
M incr(KNm)*			27.47	
F sup (cmq)*	10.41	8.14	===	5.10
F inf (cmq)*	2.09	===	6.18	===
σ_c (N/mmq)*	8.50	7.70	6.54	5.84

Taglio (KN)*		61.62		54.55
Scorrim(KN)*		===		===
F pieg(cmq)*		===		===
P staffe(m)*		===	===	===
δ staffe(m)*		===	3.63	===
τ_c (N/mmq)*		0.51		0.45

===Passo minimo Staffe = .18 m

Fmin.= 2.03 cmq

*** TRAVE N.ro 3 *** <<< IMP. 2 - CAMP. 1 >>>

Luce di calcolo = 3.92 m Base = 60 cm Q = 32.00 KN/m
 Luce netta = 3.62 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.70			0.87
x Mmax (m)*			1.87	
M calc(KNm)*	-34.13	-25.50	21.93	-35.74
M incr(KNm)*			25.90	
F sup (cmq)*	7.77	5.72	===	8.15
F inf (cmq)*	===	===	5.81	===
σ_c (N/mmq)*	7.50	6.24	6.31	7.70

Taglio (KN)*		55.10		60.75
Scorrim(KN)*		===		===
F pieg(cmq)*		===		===
P staffe(m)*		===	===	===
δ staffe(m)*		===	3.62	===
τ_c (N/mmq)*		0.45		0.50

===Passo minimo Staffe = .18 m

Fmin.= 2.03 cmq

*** TRAVE N.ro 4 *** <<< IMP. 2 - CAMP. 2 >>>

Luce di calcolo = 3.93 m Base = 60 cm Q = 32.00 KN/m
 Luce netta = 3.63 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.85			0.67
x Mmax (m)*			2.05	
M calc(KNm)*	-44.37	-34.87	23.11	-24.60 -33.25
M incr(KNm)*			26.99	
F sup (cmq)*	10.20	7.94	===	5.50 7.56
F inf (cmq)*	1.57	===	6.07	===
σ (N/mm ²)*	8.50	7.57	6.47	6.11 7.37

Taglio (KN)*		60.91		55.26
Scorrim(KN)*		===		===
F pieg(cmq)*		===		===
P staffe(m)*		===	===	===
δ staffe(m)*		===	3.63	===
τ (N/mm ²)*		0.50		0.45

===Passo minimo Staffe = .18 m

Fmin.= 2.03 cmq

*** TRAVE N.ro 5 *** <<< IMP. 3 - CAMP. 1 >>>

Luce di calcolo = 3.92 m Base = 60 cm Q = 32.00 KN/m
 Luce netta = 3.62 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.71			0.87
x Mmax (m)*			1.88	
M calc(KNm)*	-34.96	-26.29	21.67	-35.42 -44.85
M incr(KNm)*			25.66	
F sup (cmq)*	7.97	5.90	===	8.08 10.31
F inf (cmq)*	===	===	5.75	=== 1.84
σ (N/mm ²)*	7.64	6.38	6.28	7.70 8.50

Taglio (KN)*		55.40		60.45
Scorrim(KN)*		===		===
F pieg(cmq)*		===		===
P staffe(m)*		===	===	===
δ staffe(m)*		===	3.62	===
τ (N/mm ²)*		0.46		0.50

===Passo minimo Staffe = .18 m

Fmin.= 2.03 cmq

*** TRAVE N.ro 6 *** <<< IMP. 3 - CAMP. 2 >>>

Luce di calcolo = 3.93 m Base = 60 cm Q = 32.00 KN/m
 Luce netta = 3.63 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *
 * ASSE Pil. * FILO Pil. * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.84			0.70
x Mmax (m)*			2.03	
M calc(KNm)*	-43.47	-34.07	22.66	-26.18
M incr(KNm)*			26.58	
F sup (cmq)*	10.00	7.75	==	5.88
F inf (cmq)*	1.06	==	5.97	==
σc (N/mmq)*	8.50	7.50	6.41	6.34

Taglio (KN)*		60.26		55.91
Scorrim(KN)*		==		==
F pieg(cmq)*		==		==
P staffe(m)*		==	==	==
δ staffe(m)*		==	3.63	==
τc (N/mmq)*		0.49		0.46

==Passo minimo Staffe = .18 m

Fmin.= 2.03 cmq

*** TRAVE N.ro 7 *** <<< IMP. 4 - CAMP. 1 >>>

Luce di calcolo = 3.92 m Base = 60 cm Q = 32.00 KN/m
 Luce netta = 3.62 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *
 * ASSE Pil. * FILO Pil. * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.57			0.91
x Mmax (m)*			1.79	
M calc(KNm)*	-27.80	-19.55	23.67	-38.86
M incr(KNm)*			27.49	
F sup (cmq)*	6.26	4.33	==	8.90
F inf (cmq)*	==	==	6.18	==
σc (N/mmq)*	6.57	5.31	6.54	8.10

Taglio (KN)*		52.59		63.26
Scorrim(KN)*		==		==
F pieg(cmq)*		==		==
P staffe(m)*		==	==	==
δ staffe(m)*		==	3.62	==
τc (N/mmq)*		0.43		0.52

==Passo minimo Staffe = .18 m

Fmin.= 2.03 cmq

*** TRAVE N.ro 8 *** <<< IMP. 4 - CAMP. 2 >>>

Luce di calcolo = 3.93 m Base = 60 cm Q = 32.00 KN/m
 Luce netta = 3.63 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

	* PILASTRO A SIN. *	* CAMPATA *	* PILASTRO A DES. *	
	* ASSE Pil. *	* FILO Pil. *	* FILO Pil. *	* ASSE Pil. *
δx M<0 (m)*	0.87			0.52
x Mmax (m)*		2.14		
M calc(KNm)*	-47.86	-37.93	25.57	-17.37
M incr(KNm)*		29.24		-25.59
F sup (cmq)*	10.99	8.68	===	3.83
F inf (cmq)*	3.53	===	6.60	5.74
σc (N/mm ²)*	8.50	8.03	6.77	4.95
				6.24
Taglio (KN)*		63.75		52.42
Scorrim(KN)*		===		===
F pieg(cmq)*		===		===
P staffe(m)*		===		===
δ staffe(m)*		===	3.63	===
τc (N/mm ²)*		0.52		0.43
===Passo minimo Staffe = .18 m Fmin.= 2.03 cmq				

ARMATURA PILASTRI

```

*-----*
*   <<<DATI DI PROGETTO>>>   *
*-----*

*-----*
*   CLS Rbk =    25    N/mm2 *
*-----*
*   Coeff. n =    15    *
*-----*
*    $\sigma_{amm}$  =    8.50 N/mm2 *
*-----*
*    $\sigma_{med.amm}$  =    5.95 N/mm2 *
*-----*
*    $\sigma_f amm$  =    220    N/mm2 *
*-----*
*    $\tau_{c0}$  =    0.53 N/mm2 *
*-----*

```

* P *	Base	Alt.	* N *	M	F=F'	* σ_{max} *	$\sigma_f max$	Nmax/Aci	*Ftot*
* I *									
* L *	(cm)	(cm)	(KN)	(KNm)	(cm ²)	(N/mm ²)	(N/mm ²)	(N/mm ²)	(%A)
1	60	30	736.03	6.00	4.95	-4.35	===	-3.78	0.55
4	60	30	560.97	19.10	3.77	-4.81	===	-2.93	0.42
7	60	30	385.58	16.02	2.70	-3.68	===	-2.05	0.30
10	60	30	209.88	19.92	2.70	-3.55	23.31	-1.12	0.30
2	40	30	561.95	-0.63	3.78	-4.37	===	-4.28	0.63
5	40	30	420.65	-0.49	2.83	-3.35	===	-3.27	0.47
8	30	30	280.40	-0.36	1.89	-3.00	===	-2.93	0.42
11	30	30	143.35	-1.07	1.35	-1.74	===	-1.52	0.30
3	30	30	396.32	-6.91	2.66	-5.34	===	-4.04	0.59
6	30	30	297.22	-18.64	2.00	-6.73	9.04	-3.10	0.44
9	30	30	197.42	-15.66	1.35	-5.57	17.67	-2.10	0.30
12	30	30	90.21	-25.59	2.82	-8.34	218.26	-0.98	0.63

STUDIO TECNICO :	ING. PIETRO DE LEONARDIS	16/04/1994
INDIRIZZO :	VIA FORCELLA, 75	
CITTA' :	FASANO	
CANTIERE :	CEGLIE 8.9.10.11.12.13.14 E	

GEOMETRIA STRUTTURALE

N.ro IMPALCATI = 4 N.ro CAMPATE = 6 modulo E = 25000 N/mm²

*** GEOMETRIA DELLE TRAVI ***

* IMPALCATO *	TRAVE N. *	LUCE(m) *	BASE(cm) *	ALT.(cm) *	M. D'INERZIA(m ⁴) *
1	1	3.50	100	25	0.1302E-02
	2	3.60	100	25	0.1302E-02
	3	3.25	100	25	0.1302E-02
	4	3.40	100	25	0.1302E-02
	5	3.82	100	25	0.1302E-02
	6	4.03	100	25	0.1302E-02
2	7	3.50	100	25	0.1302E-02
	8	3.60	100	25	0.1302E-02
	9	3.25	100	25	0.1302E-02
	10	3.40	100	25	0.1302E-02
	11	3.82	100	25	0.1302E-02
	12	4.03	100	25	0.1302E-02
3	13	3.50	100	25	0.1302E-02
	14	3.60	100	25	0.1302E-02
	15	3.25	100	25	0.1302E-02
	16	3.40	100	25	0.1302E-02
	17	3.82	100	25	0.1302E-02
	18	4.03	100	25	0.1302E-02
4	19	3.50	100	25	0.1302E-02
	20	3.60	100	25	0.1302E-02
	21	3.25	100	25	0.1302E-02
	22	3.40	100	25	0.1302E-02
	23	3.82	100	25	0.1302E-02
	24	4.03	100	25	0.1302E-02

*** GEOMETRIA DEI PILASTRI ***

* PILASTRATA *	* PIL. N. *	* LUCE(m) *	* BASE(cm) *	* ALT.(cm) *	* M. D'INERZIA(m ⁴) *
1	1	3.00	50	30	0.1125E-02
	8	3.00	40	30	0.9000E-03
	15	3.00	40	30	0.9000E-03
	22	3.00	40	30	0.9000E-03
2	2	3.00	30	50	0.3125E-02
	9	3.00	30	40	0.1600E-02
	16	3.00	30	30	0.6750E-03
	23	3.00	30	30	0.6750E-03
3	3	3.00	30	50	0.3125E-02
	10	3.00	30	40	0.1600E-02
	17	3.00	30	30	0.6750E-03
	24	3.00	30	30	0.6750E-03
4	4	3.00	50	30	0.1125E-02
	11	3.00	40	30	0.9000E-03
	18	3.00	40	30	0.9000E-03
	25	3.00	40	30	0.9000E-03
5	5	3.00	40	30	0.9000E-03
	12	3.00	40	30	0.9000E-03
	19	3.00	40	30	0.9000E-03
	26	3.00	40	30	0.9000E-03
6	6	3.00	30	50	0.3125E-02
	13	3.00	30	40	0.1600E-02
	20	3.00	30	30	0.6750E-03
	27	3.00	30	30	0.6750E-03
7	7	3.00	50	30	0.1125E-02
	14	3.00	40	30	0.9000E-03
	21	3.00	40	30	0.9000E-03
	28	3.00	40	30	0.9000E-03

STUDIO TECNICO : ING. PIETRO DE LEONARDIS		23/04/1994
INDIRIZZO	:	VIA FORCELLA, 75
CITTA'	:	FASANO
CANTIERE	:	CEGLIE 8.9.10.11.12.13.14 E

GEOMETRIA STRUTTURALE

N.ro IMPALCATI = 4 N.ro CAMPATE = 6 modulo E = 25000 N/mm²

*** GEOMETRIA DELLE TRAVI ***

* IMPALCATO *	* TRAVE N. *	* LUCE(m) *	* BASE(cm) *	* ALT.(cm) *	* M. D' INERZIA(m ⁴) *

1	1	3.50	100	25	0.1302E-02
	2	3.60	100	25	0.1302E-02
	3	3.25	100	25	0.1302E-02
	4	3.40	100	25	0.1302E-02
	5	3.82	100	25	0.1302E-02
	6	4.03	100	25	0.1302E-02

2	7	3.50	100	25	0.1302E-02
	8	3.60	100	25	0.1302E-02
	9	3.25	100	25	0.1302E-02
	10	3.40	100	25	0.1302E-02
	11	3.82	100	25	0.1302E-02
	12	4.03	100	25	0.1302E-02

3	13	3.50	100	25	0.1302E-02
	14	3.60	100	25	0.1302E-02
	15	3.25	100	25	0.1302E-02
	16	3.40	100	25	0.1302E-02
	17	3.82	100	25	0.1302E-02
	18	4.03	100	25	0.1302E-02

4	19	3.50	100	25	0.1302E-02
	20	3.60	100	25	0.1302E-02
	21	3.25	100	25	0.1302E-02
	22	3.40	100	25	0.1302E-02
	23	3.82	100	25	0.1302E-02
	24	4.03	100	25	0.1302E-02

*** GEOMETRIA DEI PILASTRI ***

* PILASTRATA *	PIL. N.	* LUCE(m)	* BASE(cm)	* ALT.(cm)	* M. D'INERZIA(m ⁴) *
1	1	3.00	50	30	0.1125E-02
	8	3.00	40	30	0.9000E-03
	15	3.00	40	30	0.9000E-03
	22	3.00	40	30	0.9000E-03
2	2	3.00	30	50	0.3125E-02
	9	3.00	30	40	0.1600E-02
	16	3.00	30	30	0.6750E-03
	23	3.00	30	30	0.6750E-03
3	3	3.00	30	50	0.3125E-02
	10	3.00	30	40	0.1600E-02
	17	3.00	30	30	0.6750E-03
	24	3.00	30	30	0.6750E-03
4	4	3.00	50	30	0.1125E-02
	11	3.00	40	30	0.9000E-03
	18	3.00	40	30	0.9000E-03
	25	3.00	40	30	0.9000E-03
5	5	3.00	40	30	0.9000E-03
	12	3.00	40	30	0.9000E-03
	19	3.00	40	30	0.9000E-03
	26	3.00	40	30	0.9000E-03
6	6	3.00	30	50	0.3125E-02
	13	3.00	30	40	0.1600E-02
	20	3.00	30	30	0.6750E-03
	27	3.00	30	30	0.6750E-03
7	7	3.00	50	30	0.1125E-02
	14	3.00	40	30	0.9000E-03
	21	3.00	40	30	0.9000E-03
	28	3.00	40	30	0.9000E-03

CONDIZIONE DI CARICO

*** CARICHI NODALI ***

* IMPALCATO *	NODO *	COPPIA (KNm) *	Pvert (KN) *
1	1	0.00	62.00
	4	0.00	37.00
	5	0.00	37.00
	7	0.00	62.00
2	8	0.00	62.00
	11	0.00	37.00
	12	0.00	37.00
	14	0.00	62.00
3	15	0.00	62.00
	18	0.00	37.00
	19	0.00	37.00
	21	0.00	62.00
4	22	0.00	62.00
	25	0.00	74.00
	26	0.00	74.00
	28	0.00	62.00

*** CARICHI UNIFORMI SULLE TRAVI ***

* IMPALCATO *	TRAVE N. *	Q (KN/m) *
1	1	41.00
	2	41.00
	3	41.00
	4	41.00
	5	41.00
	6	41.00
2	7	41.00
	8	41.00
	9	41.00
	10	41.00
	11	41.00
	12	41.00
3	13	41.00
	14	41.00
	15	41.00
	16	41.00
	17	41.00
	18	41.00

* IMPALCATO * TRAVE N. * Q(KN/m) *		
4	19	41.00
	20	41.00
	21	41.00
	22	41.00
	23	41.00
	24	41.00

SPOSTAMENTI DI PIANO

(unita' di misura: cm)

* IMPALC.N. *	* SPOSTAMENTO *

1	-0.002
2	-0.005
3	-0.009
4	-0.016

CARATTERISTICHE DELLA SOLLECITAZIONE

(unita' di misura: KN,m)

*** CARATTERISTICHE DELLA SOLLECITAZIONE TRAVI ***

* TRAVE N. *	Msin	Mdes	Tsin	Tdes
1	-29.24	47.62	66.50	77.01
2	-45.65	42.62	74.65	72.96
3	-37.27	35.91	67.05	66.21
4	-37.83	42.06	68.46	70.95
5	-47.11	52.29	76.96	79.67
6	-62.23	40.04	88.13	77.11
7	-30.15	47.07	66.92	76.59
8	-46.04	42.03	74.92	72.69
9	-37.85	35.65	67.31	65.95
10	-38.05	41.58	68.67	70.74
11	-47.14	52.89	76.81	79.82
12	-61.08	41.14	87.57	77.67
13	-31.76	46.51	67.54	75.97
14	-45.99	41.64	75.01	72.60
15	-38.50	35.24	67.63	65.63
16	-38.20	41.44	68.75	70.66
17	-47.20	52.89	76.83	79.80
18	-60.03	43.20	86.80	78.44
19	-22.18	49.55	63.93	79.58
20	-48.40	40.22	76.08	71.53
21	-38.54	35.65	67.52	65.74
22	-37.59	41.84	68.45	70.96
23	-44.93	57.26	75.09	81.54
24	-63.10	30.93	90.60	74.64

*** CARATTERISTICHE DELLA SOLLECITAZIONE PILASTRI ***

* PILASTRO N *	Msup	Minf	Tsup	Tinf	Nsup	Ninf
1	13.39	6.85	-6.75	6.75	539.89	551.14
8	15.52	15.86	-10.46	10.46	402.39	411.39
15	13.92	14.63	-9.52	9.52	264.47	273.47
22	22.18	17.85	-13.35	13.35	125.93	134.93
2	-1.21	-0.19	0.47	-0.47	632.26	643.51
9	-0.86	-0.77	0.55	-0.55	471.62	480.62
16	-0.08	-0.18	0.09	-0.09	313.37	320.12
23	-1.16	-0.45	0.54	-0.54	155.65	162.40
3	-2.95	-1.06	1.34	-1.34	581.76	593.01
10	-2.80	-2.41	1.74	-1.74	432.75	441.75
17	-1.56	-1.39	0.99	-0.99	286.02	292.77
24	-1.68	-1.59	1.09	-1.09	139.05	145.80
4	0.81	0.56	-0.46	0.46	749.83	761.08
11	1.14	1.12	-0.76	0.76	569.17	578.17
18	1.24	1.28	-0.84	0.84	388.56	397.56
25	1.94	1.73	-1.23	1.23	208.19	217.19
5	2.05	1.15	-1.07	1.07	800.95	809.95
12	2.82	3.01	-1.95	1.95	607.05	616.05
19	2.72	2.75	-1.83	1.83	413.51	422.51
26	3.10	3.05	-2.05	2.05	220.04	229.04
6	5.12	2.98	-2.70	2.70	696.40	707.65
13	5.48	4.83	-3.44	3.44	519.61	528.61
20	2.74	2.72	-1.82	1.82	345.48	352.23
27	5.84	4.41	-3.42	3.42	172.14	178.89
7	-18.42	-9.06	9.16	-9.16	582.85	594.10
14	-21.30	-21.63	14.31	-14.31	434.74	443.74
21	-18.91	-19.85	12.92	-12.92	286.08	295.08
28	-30.93	-24.29	18.41	-18.41	136.64	145.64

ARMATURA TRAVI

```

*-----*
* <<<DATI DI PROGETTO>>> *
*-----*

*-----*
*   CLS Rbk =   25   N/mm2 *
*-----*
*   Coeff. n =   15   *
*-----*
*    $\sigma_c$  amm =   8.50 N/mm2 *
*-----*
*    $\sigma_f$  amm =  220   N/mm2 *
*-----*
*    $\tau_{c0}$  =   0.53 N/mm2 *
*-----*
*    $\tau_{c1}$  =   1.69 N/mm2 *
*-----*
*   Scr.Staffe =   99   %   *
*-----*
*   Incr.Mcamp =   10   %   *
*-----*

```

*** TRAVE N.ro 1 *** <<< IMP. 1 - CAMP. 1 >>>

Luce di calcolo = 3.50 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.10 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

```

*   PILASTRO A SIN.   *   CAMPATA   *   PILASTRO A DES.   *
*-----*
* ASSE Pil. * FILO Pil. *   *   FILO Pil. * ASSE Pil. *

```

δx M<0 (m) *	0.52			0.78
x Mmax (m) *			1.62	
M calc(KNm) *	-29.24	-19.73	24.69	-29.65
M incr(KNm) *			28.54	
F sup (cmq) *	6.45	4.28	===	6.54
F inf (cmq) *	===	===	6.29	===
σ_c (N/mm ²) *	4.98	3.95	4.91	5.01

Taglio (KN) *	60.35		66.76
Scorrim(KN) *	===		===
F pieg(cmq) *	===		===
P staffe(m) *	===	===	===
δ staffe(m) *	===	3.09	===
τ_c (N/mm ²) *	0.30		0.33

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 2 *** <<< IMP. 1 - CAMP. 2 >>>

Luce di calcolo = 3.60 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.10 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

	* PILASTRO A SIN.	* CAMPATA	* PILASTRO A DES.	*
	* ASSE Pil.	* FILO Pil.	* FILO Pil.	* ASSE Pil.
δx M<0 (m)*	0.77			0.73
x Mmax (m)*		1.82		
M calc(KNm)*	-45.65	-28.27	22.30	-25.66
M incr(KNm)*		26.72		-42.62
F sup (cmq)*	10.27	6.22	===	5.63
F inf (cmq)*	===	===	5.87	===
σc (N/mm ²)*	6.51	4.88	4.71	4.62
				6.24
Taglio (KN)*		64.40		62.71
Scorrim(KN)*		===		===
F pieg(cmq)*		===		===
P staffe(m)*		===	===	===
δ staffe(m)*		===	3.09	===
τc (N/mm ²)*		0.32		0.31
===Passo minimo Staffe = .18 m				Fmin.= 3.38 cmq

*** TRAVE N.ro 3 *** <<< IMP. 1 - CAMP. 3 >>>

Luce di calcolo = 3.25 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 2.85 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

	* PILASTRO A SIN.	* CAMPATA	* PILASTRO A DES.	*
	* ASSE Pil.	* FILO Pil.	* FILO Pil.	* ASSE Pil.
δx M<0 (m)*	0.71			0.68
x Mmax (m)*		1.63		
M calc(KNm)*	-37.27	-21.79	17.55	-26.44
M incr(KNm)*		21.21		-35.91
F sup (cmq)*	8.31	4.75	===	5.81
F inf (cmq)*	===	===	4.62	===
σc (N/mm ²)*	5.78	4.18	4.12	4.68
				5.64
Taglio (KN)*		56.80		60.06
Scorrim(KN)*		===		===
F pieg(cmq)*		===		===
P staffe(m)*		===	===	===
δ staffe(m)*		===	2.84	===
τc (N/mm ²)*		0.28		0.30
===Passo minimo Staffe = .18 m				Fmin.= 3.38 cmq

*** TRAVE N.ro 4 *** <<< IMP. 1 - CAMP. 4 >>>

Luce di calcolo = 3.40 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.10 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.69			0.75	
x Mmax (m)*			1.66		
M calc(KNm)*	-37.83	-28.03	19.33	-31.88	-42.06
M incr(KNm)*			23.32		
F sup (cmq)*	8.44	6.17	===	7.06	9.43
F inf (cmq)*	===	===	5.10	===	===
σ (N/mm ²)*	5.81	4.85	4.35	5.25	6.21
Taglio (KN)*		62.31		64.80	
Scorrim(KN)*		===		===	
F pieg (cmq)*		===		===	
P staffe(m)*		===	===	===	
δ staffe(m)*		===	3.10	===	
τ (N/mm ²)*		0.31		0.32	

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 5 *** <<< IMP. 1 - CAMP. 5 >>>

Luce di calcolo = 3.82 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.42 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.77			0.83	
x Mmax (m)*			1.87		
M calc(KNm)*	-47.11	-36.03	25.12	-33.65	-52.29
M incr(KNm)*			30.09		
F sup (cmq)*	10.62	8.02	===	7.46	11.85
F inf (cmq)*	===	===	6.64	===	===
σ (N/mm ²)*	6.64	5.64	5.06	5.41	7.11
Taglio (KN)*		70.81		69.42	
Scorrim(KN)*		===		===	
F pieg (cmq)*		===		===	
P staffe(m)*		===	===	===	
δ staffe(m)*		===	3.41	===	
τ (N/mm ²)*		0.35		0.34	

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 6 *** <<< IMP. 1 - CAMP. 6 >>>

Luce di calcolo = 4.03 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.63 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

	* PILASTRO A SIN.	* CAMPATA	* PILASTRO A DES.	*
	-----	*-----*	*-----*	*
	* ASSE Pil.	* FILO Pil.	* FILO Pil.	* ASSE Pil.
δx M<0 (m)*	0.89			0.62
x Mmax (m)*		2.14		
M calc(KNm)*	-62.23	-41.48	32.48	-28.93
M incr(KNm)*		37.59		-40.04
F sup (cmq)*	14.23	9.29	===	6.38
F inf (cmq)*	===	===	8.38	===
σc (N/mm ²)*	7.90	6.14	5.78	4.95
Taglio (KN)*		77.88		70.96
Scorrim(KN)*		===		===
F pieg(cmq)*		===		===
P staffe(m)*		===		===
δ staffe(m)*		===	3.63	===
τc (N/mm ²)*		0.38		0.35

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 7 *** <<< IMP. 2 - CAMP. 1 >>>

Luce di calcolo = 3.50 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.15 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

	* PILASTRO A SIN.	* CAMPATA	* PILASTRO A DES.	*
	-----	*-----*	*-----*	*
	* ASSE Pil.	* FILO Pil.	* FILO Pil.	* ASSE Pil.
δx M<0 (m)*	0.53			0.77
x Mmax (m)*		1.63		
M calc(KNm)*	-30.15	-20.57	24.46	-32.58
M incr(KNm)*		28.33		-47.07
F sup (cmq)*	6.66	4.47	===	7.22
F inf (cmq)*	===	===	6.24	===
σc (N/mm ²)*	5.08	4.05	4.88	5.31
Taglio (KN)*		60.77		68.39
Scorrim(KN)*		===		===
F pieg(cmq)*		===		===
P staffe(m)*		===		===
δ staffe(m)*		===	3.15	===
τc (N/mm ²)*		0.30		0.34

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 8 *** <<< IMP. 2 - CAMP. 2 >>>

Luce di calcolo = 3.60 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.20 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.78			0.72
x Mmax (m)*			1.82	
M calc(KNm)*	-46.04	-31.87	22.41	-28.31
M incr(KNm)*			26.82	
F sup (cmq)*	10.37	7.05	===	6.23
F inf (cmq)*	===	===	5.89	===
σ (N/mm ²)*	6.57	5.25	4.73	4.88

Taglio (KN)*	66.72		64.49
Scorrim(KN)*	===		===
F pieg(cmq)*	===		===
P staffe(m)*	===	===	===
δ staffe(m)*	===	3.19	===
τ (N/mm ²)*	0.33		0.32

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 9 *** <<< IMP. 2 - CAMP. 3 >>>

Luce di calcolo = 3.25 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 2.90 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.72			0.68
x Mmax (m)*			1.64	
M calc(KNm)*	-37.85	-25.21	17.40	-26.22
M incr(KNm)*			21.08	
F sup (cmq)*	8.44	5.53	===	5.76
F inf (cmq)*	===	===	4.59	===
σ (N/mm ²)*	5.81	4.55	4.10	4.66

Taglio (KN)*	59.11		59.80
Scorrim(KN)*	===		===
F pieg(cmq)*	===		===
P staffe(m)*	===	===	===
δ staffe(m)*	===	2.90	===
τ (N/mm ²)*	0.29		0.30

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 10 *** <<< IMP. 2 - CAMP. 4 >>>

Luce di calcolo = 3.40 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.10 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.70			0.75
x Mmax (m)*			1.67	
M calc(KNm)*	-38.05	-28.21	19.45	-31.43
M incr(KNm)*			23.43	
F sup (cmq)*	8.49	6.21	==	6.95
F inf (cmq)*	==	==	5.12	==
σc (N/mm ²)*	5.84	4.88	4.37	5.21

Taglio (KN)*		62.52		64.59
Scorrim(KN)*		==		==
F pieg(cmq)*		==		==
P staffe(m)*		==	==	==
δ staffe(m)*		==	3.10	==
τc (N/mm ²)*		0.31		0.32

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 11 *** <<< IMP. 2 - CAMP. 5 >>>

Luce di calcolo = 3.82 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.47 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.77			0.84
x Mmax (m)*			1.87	
M calc(KNm)*	-47.14	-36.08	24.81	-37.75
M incr(KNm)*			29.81	
F sup (cmq)*	10.62	8.03	==	8.42
F inf (cmq)*	==	==	6.58	==
σc (N/mm ²)*	6.64	5.64	5.05	5.81

Taglio (KN)*		70.66		71.62
Scorrim(KN)*		==		==
F pieg(cmq)*		==		==
P staffe(m)*		==	==	==
δ staffe(m)*		==	3.47	==
τc (N/mm ²)*		0.35		0.35

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 12 *** <<< IMP. 2 - CAMP. 6 >>>

Luce di calcolo = 4.03 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.68 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

$\delta x M < 0$ (m)*	0.87			0.63
x Mmax (m)*			2.13	
M calc(KNm)*	-61.08	-44.39	32.43	-29.96
M incr(KNm)*			37.54	
F sup (cmq)*	13.95	9.97	===	6.61
F inf (cmq)*	===	===	8.37	===
σc (N/mm ²)*	7.84	6.41	5.78	5.05

Taglio (KN)*	79.37		71.52
Scorrim(KN)*	===		===
F pieg(cmq)*	===		===
P staffe(m)*	===		===
δ staffe(m)*	===	3.68	===
τc (N/mm ²)*	0.39		0.35

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 13 *** <<< IMP. 3 - CAMP. 1 >>>

Luce di calcolo = 3.50 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.20 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

$\delta x M < 0$ (m)*	0.56			0.77
x Mmax (m)*			1.64	
M calc(KNm)*	-31.76	-22.09	23.87	-35.58
M incr(KNm)*			27.78	
F sup (cmq)*	7.03	4.82	===	7.91
F inf (cmq)*	===	===	6.11	===
σc (N/mm ²)*	5.25	4.22	4.83	5.61

Taglio (KN)*	61.39		69.82
Scorrim(KN)*	===		===
F pieg(cmq)*	===		===
P staffe(m)*	===		===
δ staffe(m)*	===	3.20	===
τc (N/mm ²)*	0.30		0.34

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 14 *** <<< IMP. 3 - CAMP. 2 >>>

Luce di calcolo = 3.60 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.30 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.77			0.71
x Mmax (m)*			1.82	
M calc(KNm)*	-45.99	-35.20	22.63	-31.22
M incr(KNm)*			27.01	
F sup (cmq)*	10.35	7.82	==	6.90
F inf (cmq)*	==	==	5.94	==
σc (N/mmq)*	6.57	5.58	4.75	5.18

Taglio (KN)*		68.86		66.45
Scorrim(KN)*		==		==
F pieg(cmq)*		==		==
P staffe(m)*		==	==	==
δ staffe(m)*		==	3.29	==
τc (N/mmq)*		0.34		0.33

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 15 *** <<< IMP. 3 - CAMP. 3 >>>

Luce di calcolo = 3.25 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 2.95 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.73			0.68
x Mmax (m)*			1.64	
M calc(KNm)*	-38.50	-28.82	17.28	-25.86
M incr(KNm)*			20.97	
F sup (cmq)*	8.59	6.35	==	5.67
F inf (cmq)*	==	==	4.56	==
σc (N/mmq)*	5.88	4.95	4.10	4.63

Taglio (KN)*		61.48		59.48
Scorrim(KN)*		==		==
F pieg(cmq)*		==		==
P staffe(m)*		==	==	==
δ staffe(m)*		==	2.95	==
τc (N/mmq)*		0.30		0.29

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 16 *** <<< IMP. 3 - CAMP. 4 >>>

Luce di calcolo = 3.40 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.10 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.70			0.74
x Mmax (m)*			1.67	
M calc(KNm)*	-38.20	-28.35	19.45	-31.30
M incr(KNm)*			23.43	
F sup (cmq)*	8.52	6.24	===	6.92
F inf (cmq)*	===	===	5.12	===
σ (N/mm ²)*	5.84	4.88	4.37	5.18
Taglio (KN)*		62.60		64.51
Scorrim(KN)*		===		===
F pieg(cmq)*		===		===
P staffe(m)*		===	===	===
δ staffe(m)*		===	3.10	===
τ (N/mm ²)*		0.31		0.32

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 17 *** <<< IMP. 3 - CAMP. 5 >>>

Luce di calcolo = 3.82 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.52 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.77			0.84
x Mmax (m)*			1.87	
M calc(KNm)*	-47.20	-36.14	24.78	-41.38
M incr(KNm)*			29.78	
F sup (cmq)*	10.64	8.04	===	9.27
F inf (cmq)*	===	===	6.57	===
σ (N/mm ²)*	6.64	5.64	5.05	6.14
Taglio (KN)*		70.68		73.65
Scorrim(KN)*		===		===
F pieg(cmq)*		===		===
P staffe(m)*		===	===	===
δ staffe(m)*		===	3.51	===
τ (N/mm ²)*		0.35		0.36

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 18 *** <<< IMP. 3 - CAMP. 6 >>>

Luce di calcolo = 4.03 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.73 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.87			0.66
x Mmax (m)*		2.11		
M calc(KNm)*	-60.03	-47.47	31.84	-31.89
M incr(KNm)*			37.00	
F sup (cmq)*	13.71	10.70	===	7.06
F inf (cmq)*	===	===	8.24	===
σ (N/mm ²)*	7.77	6.71	5.74	5.25

Taglio (KN)*	80.65		72.29
Scorrim(KN)*	===		===
F pieg(cmq)*	===		===
P staffe(m)*	===	===	===
δ staffe(m)*	===	3.73	===
τ (N/mm ²)*	0.40		0.36

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 19 *** <<< IMP. 4 - CAMP. 1 >>>

Luce di calcolo = 3.50 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.20 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.39			0.77
x Mmax (m)*		1.55		
M calc(KNm)*	-22.18	-13.06	27.67	-38.08
M incr(KNm)*			31.25	
F sup (cmq)*	4.84	2.80	===	8.49
F inf (cmq)*	===	===	6.91	===
σ (N/mm ²)*	4.23	3.12	5.18	5.84

Taglio (KN)*	57.78		73.43
Scorrim(KN)*	===		===
F pieg(cmq)*	===		===
P staffe(m)*	===	===	===
δ staffe(m)*	===	3.20	===
τ (N/mm ²)*	0.28		0.36

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 20 *** <<< IMP. 4 - CAMP. 2 >>>

Luce di calcolo = 3.60 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.30 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

	* PILASTRO A SIN.	* CAMPATA	* PILASTRO A DES.	*	
	-----	*-----*	*-----*	*	
	* ASSE Pil.	* FILO Pil.	* FILO Pil.	* ASSE Pil.	

δx M<0 (m)*	0.81			0.70	
x Mmax (m)*		1.85			
M calc(KNm)*	-48.40	-37.45	22.18	-29.95	-40.22
M incr(KNm)*			26.61		
F sup (cmq)*	10.92	8.35	==	6.61	9.00
F inf (cmq)*	==	==	5.84	==	==
σ_c (N/mm ²)*	6.77	5.78	4.71	5.05	6.04

Taglio (KN)*		69.93		65.38	
Scorrim(KN)*		==		==	
F pieg(cmq)*		==		==	
P staffe(m)*		==	==	==	
δ staffe(m)*		==	3.29	==	
τ_c (N/mm ²)*		0.34		0.32	

==Passo minimo Staffe = .18 m			Fmin.= 3.38 cmq		

*** TRAVE N.ro 21 *** <<< IMP. 4 - CAMP. 3 >>>

Luce di calcolo = 3.25 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 2.95 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

	* PILASTRO A SIN.	* CAMPATA	* PILASTRO A DES.	*	
	-----	*-----*	*-----*	*	
	* ASSE Pil. *	* FILO Pil. *	* FILO Pil. *	* ASSE Pil. *	

$\delta x M<0$ (m)*	0.73			0.69	
x Mmax (m)*		1.64			
M calc(KNm)*	-38.54	-28.88	17.06	-26.25	-35.65
M incr(KNm)*			20.77		
F sup (cmq)*	8.60	6.36	===	5.76	7.93
F inf (cmq)*	===	===	4.52	===	===
σc (N/mmq)*	5.88	4.95	4.07	4.68	5.61

Taglio (KN)*		61.37		59.59	
Scorrim(KN)*		===		===	
F pieg(cmq)*		===		===	
P staffe(m)*		===	===	===	
δ staffe(m)*		===	2.95	===	
τc (N/mmq)*		0.30		0.29	

===Passo minimo Staffe = .18 m			Fmin.= 3.38 cmq		

*** TRAVE N.ro 22 *** <<< IMP. 4 - CAMP. 4 >>>

Luce di calcolo = 3.40 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.10 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *
 ----------*-----*
 * ASSE Pil. * FILO Pil. * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.69			0.75
x Mmax (m)*			1.66	
M calc(KNm)*	-37.59	-27.78	19.56	-31.66
M incr(KNm)*			23.53	
F sup (cmq)*	8.38	6.11	===	7.00
F inf (cmq)*	===	===	5.14	===
σc (N/mmq)*	5.78	4.83	4.38	5.21

Taglio (KN)*		62.30		64.81
Scorrim(KN)*		===		===
F pieg(cmq)*		===		===
P staffe(m)*		===	===	===
δ staffe(m)*		===	3.10	===
τc (N/mmq)*		0.31		0.32

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 23 *** <<< IMP. 4 - CAMP. 5 >>>

Luce di calcolo = 3.82 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.52 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *
 ----------*-----*
 * ASSE Pil. * FILO Pil. * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.75			0.91
x Mmax (m)*			1.83	
M calc(KNm)*	-44.93	-34.13	23.82	-45.49
M incr(KNm)*			28.93	
F sup (cmq)*	10.10	7.58	===	10.23
F inf (cmq)*	===	===	6.38	===
σc (N/mmq)*	6.44	5.48	4.95	6.51

Taglio (KN)*		68.94		75.39
Scorrim(KN)*		===		===
F pieg(cmq)*		===		===
P staffe(m)*		===	===	===
δ staffe(m)*		===	3.51	===
τc (N/mmq)*		0.34		0.37

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 24 *** <<< IMP. 4 - CAMP. 6 >>>

Luce di calcolo = 4.03 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.73 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.86			0.47
x Mmax (m)*			2.20	
M calc(KNm)*	-63.10	-49.97	37.01	-20.20
M incr(KNm)*			41.71	
F sup (cmq)*	14.44	11.30	==	4.39
F inf (cmq)*	==	==	9.34	==
σc (N/mm ²)*	7.97	6.91	6.18	4.00

Taglio (KN)*	84.45	68.49
Scorrim(KN)*	==	==
F pieg(cmq)*	==	==
P staffe(m)*	==	==
δ staffe(m)*	==	3.73
τc (N/mm ²)*	0.42	0.34

==Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

ARMATURA PILASTRI

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*-----*
*   <<<DATI DI PROGETTO>>>   *
*-----*

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*-----*
*   CLS Rbk =    25    N/mm2 *
*-----*
*   Coeff. n =    15    *
*-----*
*   σc amm =    8.50 N/mm2 *
*-----*
*   σc med.amm =    5.95 N/mm2 *
*-----*
*   σf amm =    220    N/mm2 *
*-----*
*   τc0 =    0.53 N/mm2 *
*-----*

```

* P *	Base	Alt.	* N *	M	* F=F' *	σc max	σf max	Nmax/Aci	*Ftot*
* I *									
* L *	(cm)	(cm)	(KN)	(KNm)	(cmq)	(N/mm ²)	(N/mm ²)	(N/mm ²)	(%A)
1	50	30	551.13	6.84	3.71	-4.21	===	-3.42	0.49
8	40	30	411.38	15.86	2.77	-5.52	===	-3.21	0.46
15	40	30	273.47	14.63	1.84	-4.40	0.16	-2.18	0.31
22	40	30	134.93	17.85	1.80	-5.17	82.00	-1.08	0.30
2	30	50	643.51	-0.19	4.33	-3.96	===	-3.95	0.58
9	30	40	480.61	-0.77	3.23	-3.79	===	-3.71	0.54
16	30	30	320.12	-0.18	2.15	-3.35	===	-3.32	0.48
23	30	30	162.39	-0.45	1.35	-1.82	===	-1.73	0.30
3	30	50	593.00	-1.06	3.99	-3.73	===	-3.66	0.53
10	30	40	441.75	-2.40	2.97	-3.68	===	-3.43	0.49
17	30	30	292.76	-1.39	1.97	-3.32	===	-3.05	0.44
24	30	30	145.79	-1.58	1.35	-1.87	===	-1.55	0.30
4	50	30	761.07	0.55	5.12	-4.66	===	-4.60	0.68
11	40	30	578.16	1.12	3.89	-4.55	===	-4.39	0.65
18	40	30	397.55	1.27	2.67	-3.29	===	-3.11	0.45
25	40	30	217.18	1.72	1.80	-1.99	===	-1.73	0.30
5	40	30	809.95	1.14	5.45	-6.09	===	-5.94	0.91
12	40	30	616.05	3.01	4.14	-5.06	===	-4.65	0.69
19	40	30	422.51	2.75	2.84	-3.69	===	-3.29	0.47
26	40	30	229.03	3.05	1.80	-2.29	===	-1.83	0.30
6	30	50	707.64	2.97	4.76	-4.50	===	-4.31	0.63
13	30	40	528.60	4.82	3.55	-4.55	===	-4.05	0.59
20	30	30	352.23	2.72	2.37	-4.15	===	-3.63	0.53

* P *	Base *	Alt. *	N *	M *	F=F' *	σ_c max *	σ_f max *	Nmax/Aci *	Ftot *
* I *									
* L *	(cm) *	(cm) *	(KN) *	(KNm) *	(cmq) *	(N/mm ²) *	(N/mm ²) *	(N/mm ²) *	(%A) *
27	30	30	178.88	4.41	1.35	-2.80	===	-1.90	0.30
7	50	30	594.10	-9.06	3.99	-4.70	===	-3.67	0.53
14	40	30	443.74	-21.62	2.98	-6.56	===	-3.44	0.50
21	40	30	295.07	-19.85	1.98	-5.34	21.68	-2.34	0.33
28	40	30	136.63	-30.93	2.86	-8.40	214.80	-1.13	0.48

STUDIO TECNICO : ING. PIETRO DE LEONARDIS		23/04/1994
INDIRIZZO	:	VIA FORCELLA, 75
CITTA'	:	FASANO
CANTIERE	:	CEGLIE 1.2.3.4 F

GEOMETRIA STRUTTURALE

 N.ro IMPALCATI = 4 N.ro CAMPATE = 3 modulo E = 25000 N/mm²

 *** GEOMETRIA DELLE TRAVI ***

* IMPALCATO	* TRAVE N.	* LUCE(m)	* BASE(cm)	* ALT.(cm)	* M. D'INERZIA(m ⁴)
1	1	3.35	60	25	0.7813E-03
	2	3.65	60	25	0.7813E-03
	3	3.35	90	25	0.1172E-02
2	4	3.35	60	25	0.7813E-03
	5	3.65	60	25	0.7813E-03
	6	3.35	90	25	0.1172E-02
3	7	3.35	60	25	0.7813E-03
	8	3.65	60	25	0.7813E-03
	9	3.35	90	25	0.1172E-02
4	10	3.35	60	25	0.7813E-03
	11	3.65	60	25	0.7813E-03
	12	3.35	90	25	0.1172E-02

*** GEOMETRIA DEI PILASTRI ***

* PILASTRATA *	PIL. N.	* LUCE (m)	* BASE (cm)	* ALT. (cm)	* M. D' INERZIA (m ⁴) *
1	1	3.00	30	30	0.6750E-03
	5	3.00	30	30	0.6750E-03
	9	3.00	30	30	0.6750E-03
	13	3.00	30	30	0.6750E-03
2	2	3.00	40	30	0.9000E-03
	6	3.00	40	30	0.9000E-03
	10	3.00	30	30	0.6750E-03
	14	3.00	30	30	0.6750E-03
3	3	3.00	40	30	0.9000E-03
	7	3.00	40	30	0.9000E-03
	11	3.00	30	30	0.6750E-03
	15	3.00	30	30	0.6750E-03
4	4	3.00	60	30	0.1350E-02
	8	3.00	60	30	0.1350E-02
	12	3.00	60	30	0.1350E-02
	16	3.00	60	30	0.1350E-02

CONDIZIONE DI CARICO

*** CARICHI NODALI ***

* IMPALCATO *	NODO *	COPPIA(KNm)	Pvert(KN) *
1	1	0.00	33.00
	4	0.00	65.00
2	5	0.00	33.00
	8	0.00	65.00
3	9	0.00	33.00
	12	0.00	65.00
4	13	0.00	33.00
	16	0.00	65.00

*** CARICHI UNIFORMI SULLE TRAVI ***

* IMPALCATO *	TRAVE N. *	Q(KN/m) *
1	1	32.00
	2	32.00
	3	34.00
2	4	32.00
	5	32.00
	6	34.00
3	7	32.00
	8	32.00
	9	34.00
4	10	32.00
	11	32.00
	12	34.00

SPOSTAMENTI DI PIANO

(unita' di misura: cm)

* IMPALC.N. *	* SPOSTAMENTO *

1	-0.002
2	-0.007
3	-0.012
4	-0.021

CARATTERISTICHE DELLA SOLLECITAZIONE

(unita' di misura: KN,m)

*** CARATTERISTICHE DELLA SOLLECITAZIONE TRAVI ***

* TRAVE N. *	Msin	Mdes	Tsin	Tdes	*
1	-21.20	34.32	49.69	57.52	
2	-35.57	35.43	58.44	58.37	
3	-36.04	23.62	60.66	53.25	
4	-22.52	33.73	50.26	56.95	
5	-35.54	35.34	58.46	58.35	
6	-35.67	24.66	60.24	53.67	
7	-23.51	33.47	50.63	56.58	
8	-35.41	35.16	58.47	58.34	
9	-35.71	25.38	60.04	53.87	
10	-16.91	35.76	47.98	59.23	
11	-36.00	35.85	58.44	58.37	
12	-37.24	19.12	62.36	51.55	

*** CARATTERISTICHE DELLA SOLLECITAZIONE PILASTRI ***

* PILASTRO	N *	Msup	* Minf	* Tsup	* Tinf	* Nsup	* Ninf	*
1		8.70	4.49	-4.40	4.40	350.79	357.54	
5		11.85	12.51	-8.12	8.12	261.36	268.11	
9		10.11	10.67	-6.93	6.93	171.35	178.10	
13		16.91	13.40	-10.10	10.10	80.98	87.73	
2		0.41	0.40	-0.27	0.27	486.57	495.57	
6		0.91	0.85	-0.59	0.59	361.62	370.62	
10		1.06	0.91	-0.66	0.66	239.46	246.21	
14		0.24	0.89	-0.38	0.38	117.67	124.42	
3		0.22	0.30	-0.17	0.17	499.19	508.19	
7		0.31	0.40	-0.24	0.24	371.17	380.17	
11		-0.16	0.02	0.05	-0.05	245.84	252.59	
15		1.39	0.70	-0.70	0.70	120.72	127.47	
4		-9.85	-4.64	4.83	-4.83	512.82	526.32	
8		-13.04	-13.78	8.94	-8.94	381.08	394.58	
12		-10.99	-11.62	7.54	-7.54	248.91	262.41	
16		-19.12	-14.40	11.17	-11.17	116.55	130.05	

ARMATURA TRAVI

```

*-----*
* <<<DATI DI PROGETTO>>> *
*-----*

*-----*
*   CLS Rbk =   25   N/mm2 *
*-----*
*   Coeff. n =   15   *
*-----*
*    $\sigma_c$  amm =   8.50 N/mm2 *
*-----*
*    $\sigma_f$  amm =  220   N/mm2 *
*-----*
*    $\tau_{c0}$  =   0.53 N/mm2 *
*-----*
*    $\tau_{c1}$  =   1.69 N/mm2 *
*-----*
*   Scr.Staffe =   99   %   *
*-----*
*   Incr.Mcamp =   10   %   *
*-----*

```

*** TRAVE N.ro 1 ***

<<< IMP. 1 - CAMP. 1 >>>

Luce di calcolo = 3.35 m Base = 60 cm Q = 32.00 KN/m
 Luce netta = 3.05 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

```

*   PILASTRO A SIN.   *   CAMPATA   *   PILASTRO A DES.   *
*-----*
* ASSE Pil. * FILO Pil. *   *   FILO Pil. * ASSE Pil. *

```

δx M<0 (m)*	0.51			0.75
x Mmax (m)*			1.55	
M calc(KNm)*	-21.20	-14.11	17.38	-26.05
M incr(KNm)*			20.16	
F sup (cmq)*	4.71	3.08	===	5.84
F inf (cmq)*	===	===	4.47	===
σ_c (N/mm ²)*	5.58	4.38	5.41	6.31
Taglio (KN)*		44.89		52.72
Scorrim(KN)*		===		===
F pieg(cmq)*		===		===
P staffe(m)*		===	===	===
δ staffe(m)*		===	3.04	===
τ_c (N/mm ²)*		0.37		0.43

===Passo minimo Staffe = .18 m

Fmin.= 2.03 cmq

*** TRAVE N.ro 2 *** <<< IMP. 1 - CAMP. 2 >>>

Luce di calcolo = 3.65 m Base = 60 cm Q = 32.00 KN/m
 Luce netta = 3.35 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.77			0.76	
x Mmax (m)*			1.82		
M calc(KNm)*	-35.57	-27.16	17.80	-27.03	-35.43
M incr(KNm)*			21.35		
F sup (cmq)*	8.11	6.11	==	6.08	8.08
F inf (cmq)*	==	==	4.75	==	==
σc (N/mmq)*	7.70	6.51	5.61	6.47	7.70

Taglio (KN)*		53.64		53.57	
Scorrim(KN)*		==		==	
F pieg(cmq)*		==		==	
P staffe(m)*		==	==	==	
δ staffe(m)*		==	3.35	==	
τc (N/mmq)*		0.44		0.44	

==Passo minimo Staffe = .18 m

Fmin.= 2.03 cmq

*** TRAVE N.ro 3 *** <<< IMP. 1 - CAMP. 3 >>>

Luce di calcolo = 3.35 m Base = 90 cm Q = 34.00 KN/m
 Luce netta = 3.05 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.75			0.53	
x Mmax (m)*			1.78		
M calc(KNm)*	-36.04	-27.32	18.08	-16.02	-23.62
M incr(KNm)*			21.06		
F sup (cmq)*	8.06	6.03	==	3.47	5.18
F inf (cmq)*	==	==	4.60	==	==
σc (N/mmq)*	6.01	5.08	4.37	3.72	4.68

Taglio (KN)*		55.56		48.15	
Scorrim(KN)*		==		==	
F pieg(cmq)*		==		==	
P staffe(m)*		==	==	==	
δ staffe(m)*		==	3.04	==	
τc (N/mmq)*		0.30		0.26	

==Passo minimo Staffe = .18 m

Fmin.= 3.04 cmq

*** TRAVE N.ro 4 *** <<< IMP. 2 - CAMP. 1 >>>

Luce di calcolo = 3.35 m Base = 60 cm Q = 32.00 KN/m
 Luce netta = 3.05 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *
 * ASSE Pil. * FILO Pil. * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.54			0.75	
x Mmax (m)*			1.57		
M calc(KNm)*	-22.52	-15.34	16.95	-25.55	-33.73
M incr(KNm)*			19.76		
F sup (cmq)*	5.02	3.36	==	5.73	7.67
F inf (cmq)*	==	==	4.38	==	==
σc (N/mm ²)*	5.78	4.60	5.35	6.24	7.44
Taglio (KN)*		45.46		52.15	
Scorrim(KN)*		==		==	
F pieg(cmq)*		==		==	
P staffe(m)*		==	==	==	
δ staffe(m)*		==	3.04	==	
τc (N/mm ²)*		0.37		0.43	

==Passo minimo Staffe = .18 m

Fmin.= 2.03 cmq

*** TRAVE N.ro 5 *** <<< IMP. 2 - CAMP. 2 >>>

Luce di calcolo = 3.65 m Base = 60 cm Q = 32.00 KN/m
 Luce netta = 3.35 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *
 * ASSE Pil. * FILO Pil. * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.77			0.76	
x Mmax (m)*			1.82		
M calc(KNm)*	-35.54	-27.13	17.86	-26.95	-35.34
M incr(KNm)*			21.40		
F sup (cmq)*	8.11	6.10	==	6.06	8.05
F inf (cmq)*	==	==	4.76	==	==
σc (N/mm ²)*	7.70	6.51	5.61	6.44	7.64
Taglio (KN)*		53.66		53.55	
Scorrim(KN)*		==		==	
F pieg(cmq)*		==		==	
P staffe(m)*		==	==	==	
δ staffe(m)*		==	3.35	==	
τc (N/mm ²)*		0.44		0.44	

==Passo minimo Staffe = .18 m

Fmin.= 2.03 cmq

*** TRAVE N.ro 6 *** <<< IMP. 2 - CAMP. 3 >>>

Luce di calcolo = 3.35 m Base = 90 cm Q = 34.00 KN/m
 Luce netta = 3.05 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

	* PILASTRO A SIN. *	* CAMPATA *	* PILASTRO A DES. *
	* ASSE Pil. *	* FILO Pil. *	* FILO Pil. *
			* ASSE Pil. *

δx M<0 (m)*	0.75			0.55
x Mmax (m)*		1.77		
M calc(KNm)*	-35.67	-27.02	17.70	-16.99
M incr(KNm)*			20.72	
F sup (cmq)*	7.97	5.96	===	3.68
F inf (cmq)*	===	===	4.52	===
σc (N/mm ²)*	5.98	5.05	4.32	3.85

Taglio (KN)*	55.14		48.57
Scorrim(KN)*	===		===
F pieg(cmq)*	===		===
P staffe(m)*	===	===	===
δ staffe(m)*	===	3.04	===
τc (N/mm ²)*	0.30		0.27

===Passo minimo Staffe = .18 m

Fmin.= 3.04 cmq

*** TRAVE N.ro 7 *** <<< IMP. 3 - CAMP. 1 >>>

Luce di calcolo = 3.35 m Base = 60 cm Q = 32.00 KN/m
 Luce netta = 3.05 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

	* PILASTRO A SIN. *	* CAMPATA *	* PILASTRO A DES. *
	* ASSE Pil. *	* FILO Pil. *	* FILO Pil. *
			* ASSE Pil. *

δx M<0 (m)*	0.56			0.75
x Mmax (m)*		1.58		
M calc(KNm)*	-23.51	-16.27	16.55	-25.35
M incr(KNm)*			19.40	
F sup (cmq)*	5.25	3.57	===	5.68
F inf (cmq)*	===	===	4.29	===
σc (N/mm ²)*	5.94	4.75	5.28	6.24

Taglio (KN)*	45.83		51.78
Scorrim(KN)*	===		===
F pieg(cmq)*	===		===
P staffe(m)*	===	===	===
δ staffe(m)*	===	3.04	===
τc (N/mm ²)*	0.38		0.43

===Passo minimo Staffe = .18 m

Fmin.= 2.03 cmq

*** TRAVE N.ro 8 *** <<< IMP. 3 - CAMP. 2 >>>

Luce di calcolo = 3.65 m Base = 60 cm Q = 32.00 KN/m
 Luce netta = 3.35 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.76			0.76
x Mmax (m)*			1.82	
M calc(KNm)*	-35.41	-27.00	18.01	-26.77
M incr(KNm)*			21.54	
F sup (cmq)*	8.07	6.07	===	6.02
F inf (cmq)*	===	===	4.79	===
σc (N/mmq)*	7.64	6.47	5.64	6.44

Taglio (KN)*		53.67		53.54
Scorrim(KN)*		===		===
F pieg(cmq)*		===		===
P staffe(m)*		===	===	===
δ staffe(m)*		===	3.35	===
τc (N/mmq)*		0.44		0.44

===Passo minimo Staffe = .18 m

Fmin.= 2.03 cmq

*** TRAVE N.ro 9 *** <<< IMP. 3 - CAMP. 3 >>>

Luce di calcolo = 3.35 m Base = 90 cm Q = 34.00 KN/m
 Luce netta = 3.05 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.75			0.57
x Mmax (m)*			1.76	
M calc(KNm)*	-35.71	-27.09	17.30	-17.68
M incr(KNm)*			20.35	
F sup (cmq)*	7.98	5.98	===	3.84
F inf (cmq)*	===	===	4.44	===
σc (N/mmq)*	5.98	5.08	4.28	3.93

Taglio (KN)*		54.94		48.77
Scorrim(KN)*		===		===
F pieg(cmq)*		===		===
P staffe(m)*		===	===	===
δ staffe(m)*		===	3.04	===
τc (N/mmq)*		0.30		0.27

===Passo minimo Staffe = .18 m

Fmin.= 3.04 cmq

*** TRAVE N.ro 10 *** <<< IMP. 4 - CAMP. 1 >>>

Luce di calcolo = 3.35 m Base = 60 cm Q = 32.00 KN/m
 Luce netta = 3.05 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.40			0.75	
x Mmax (m)*			1.49		
M calc(KNm)*	-16.91	-10.07	19.06	-27.24	-35.76
M incr(KNm)*			21.69		
F sup (cmq)*	3.72	2.17	===	6.13	8.16
F inf (cmq)*	===	===	4.82	===	===
σc (N/mm ²)*	4.88	3.60	5.64	6.51	7.70

Taglio (KN)*		43.18		54.43	
Scorrim(KN)*		===		===	
F pieg(cmq)*		===		===	
P staffe(m)*		===	===	===	
δ staffe(m)*		===	3.04	===	
τc (N/mm ²)*		0.35		0.45	

===Passo minimo Staffe = .18 m

Fmin.= 2.03 cmq

*** TRAVE N.ro 11 *** <<< IMP. 4 - CAMP. 2 >>>

Luce di calcolo = 3.65 m Base = 60 cm Q = 32.00 KN/m
 Luce netta = 3.35 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.78			0.78	
x Mmax (m)*			1.82		
M calc(KNm)*	-36.00	-27.59	17.37	-27.46	-35.85
M incr(KNm)*			20.97		
F sup (cmq)*	8.22	6.21	===	6.18	8.18
F inf (cmq)*	===	===	4.66	===	===
σc (N/mm ²)*	7.77	6.57	5.54	6.54	7.70

Taglio (KN)*		53.64		53.57	
Scorrim(KN)*		===		===	
F pieg(cmq)*		===		===	
P staffe(m)*		===	===	===	
δ staffe(m)*		===	3.35	===	
τc (N/mm ²)*		0.44		0.44	

===Passo minimo Staffe = .18 m

Fmin.= 2.03 cmq

*** TRAVE N.ro 12 *** <<< IMP. 4 - CAMP. 3 >>>

Luce di calcolo = 3.35 m Base = 90 cm Q = 34.00 KN/m
 Luce netta = 3.05 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.75			0.43
x Mmax (m)*			1.83	
M calc(KNm)*	-37.24	-28.27	19.96	-11.77
M incr(KNm)*			22.78	
F sup (cmq)*	8.34	6.25	===	2.52
F inf (cmq)*	===	===	4.99	===
σc (N/mm ²)*	6.14	5.20	4.58	3.12
Taglio (KN)*		57.26		46.45
Scorrim(KN)*		===		===
F pieg(cmq)*		===		===
P staffe(m)*		===	===	===
δ staffe(m)*		===	3.04	===
τc (N/mm ²)*		0.31		0.25

===Passo minimo Staffe = .18 m

Fmin.= 3.04 cmq

ARMATURA PILASTRI

```

*-----*
*   <<<DATI DI PROGETTO>>>   *
*-----*

*-----*
*   CLS Rbk =    25    N/mm2 *
*-----*
*   Coeff. n =    15    *
*-----*
*    $\sigma_c$  amm =    8.50 N/mm2 *
*-----*
*    $\sigma_c$  med.amm =    5.95 N/mm2 *
*-----*
*    $\sigma_f$  amm =    220    N/mm2 *
*-----*
*    $\tau_{c0}$  =    0.53 N/mm2 *
*-----*

```

* P *	* Base *	* Alt. *	* N *	* M *	* F=F' *	* σ_c max *	* σ_f max *	* Nmax/Aci *	* Ftot*
* I *	*-----*	*-----*	*-----*	*-----*	*-----*	*-----*	*-----*	*-----*	*-----*
* L *	(cm)	(cm)	(KN)	(KNm)	(cmq)	(N/mm ²)	(N/mm ²)	(N/mm ²)	(%A)
1	30	30	357.54	4.49	2.40	-4.53	===	-3.68	0.53
5	30	30	268.10	12.51	1.80	-5.28	===	-2.81	0.40
9	30	30	178.10	10.66	1.35	-4.06	5.72	-1.89	0.30
13	30	30	80.97	16.90	1.36	-7.22	215.64	-0.93	0.30
2	40	30	495.56	0.39	3.33	-3.87	===	-3.81	0.56
6	40	30	370.61	0.84	2.49	-3.03	===	-2.91	0.42
10	30	30	246.21	0.90	1.66	-2.77	===	-2.59	0.37
14	30	30	124.42	0.89	1.35	-1.50	===	-1.32	0.30
3	40	30	508.19	0.29	3.42	-3.94	===	-3.90	0.57
7	40	30	380.17	0.40	2.56	-3.04	===	-2.98	0.43
11	30	30	252.58	0.02	1.70	-2.66	===	-2.66	0.38
15	30	30	127.47	0.70	1.35	-1.50	===	-1.36	0.30
4	60	30	526.31	-4.64	3.54	-3.22	===	-2.76	0.39
8	60	30	394.57	-13.77	2.70	-3.50	===	-2.10	0.30
12	60	30	262.41	-11.62	2.70	-2.58	===	-1.40	0.30
16	60	30	130.04	-14.40	2.70	-2.64	27.67	-0.69	0.30

STUDIO TECNICO : ING. PIETRO DE LEONARDIS		16/04/1994
INDIRIZZO	:	VIA FORCELLA, 75
CITTA'	:	FASANO
CANTIERE	:	CEGLIE 5.6.7.8 F

GEOMETRIA STRUTTURALE

 N.ro IMPALCATI = 4 N.ro CAMPATE = 3 modulo E = 25000 N/mm²

 *** GEOMETRIA DELLE TRAVI ***

* IMPALCATO	* TRAVE N.	* LUCE(m)	* BASE(cm)	* ALT.(cm)	* M. D'INERZIA(m ⁴) *
1	1	4.30	90	25	0.1172E-02
	2	3.75	60	25	0.7813E-03
	3	4.30	60	25	0.7813E-03
2	4	4.30	90	25	0.1172E-02
	5	3.75	60	25	0.7813E-03
	6	4.30	60	25	0.7813E-03
3	7	4.30	90	25	0.1172E-02
	8	3.75	60	25	0.7813E-03
	9	4.30	60	25	0.7813E-03
4	10	4.30	90	25	0.1172E-02
	11	3.75	60	25	0.7813E-03
	12	4.30	60	25	0.7813E-03

 *** GEOMETRIA DEI PILASTRI ***

* PILASTRATA *	PIL. N.	* LUCE(m)	* BASE(cm)	* ALT.(cm)	* M. D'INERZIA(m ⁴) *
1	1	3.00	60	30	0.1350E-02
	5	3.00	60	30	0.1350E-02
	9	3.00	60	30	0.1350E-02
	13	3.00	60	30	0.1350E-02
2	2	3.00	40	30	0.9000E-03
	6	3.00	40	30	0.9000E-03
	10	3.00	30	30	0.6750E-03
	14	3.00	30	30	0.6750E-03
3	3	3.00	40	30	0.9000E-03
	7	3.00	40	30	0.9000E-03
	11	3.00	30	30	0.6750E-03
	15	3.00	30	30	0.6750E-03
4	4	3.00	30	30	0.6750E-03
	8	3.00	30	30	0.6750E-03
	12	3.00	30	30	0.6750E-03
	16	3.00	30	30	0.6750E-03

CONDIZIONE DI CARICO

*** CARICHI NODALI ***

* IMPALCATO *	NODO *	COPPIA(KNm) *	Pvert(KN) *
1	1	0.00	65.00
	4	0.00	33.00
2	5	0.00	65.00
	8	0.00	33.00
3	9	0.00	65.00
	12	0.00	33.00
4	13	0.00	65.00
	16	0.00	33.00

*** CARICHI UNIFORMI SULLE TRAVI ***

* IMPALCATO *	TRAVE N. *	Q(KN/m) *
1	1	34.00
	2	32.00
	3	32.00
2	4	34.00
	5	32.00
	6	32.00
3	7	34.00
	8	32.00
	9	32.00
4	10	34.00
	11	32.00
	12	32.00

SPOSTAMENTI DI PIANO

(unita' di misura: cm)

* IMPALC.N. *	* SPOSTAMENTO *

1	0.006
2	0.018
3	0.031
4	0.051

CARATTERISTICHE DELLA SOLLECITAZIONE

(unita' di misura: KN,m)

*** CARATTERISTICHE DELLA SOLLECITAZIONE TRAVI ***

* TRAVE N. *	Msin	Mdes	Tsin	Tdes	*
1	-42.95	53.73	70.60	75.61	
2	-38.89	39.91	59.74	60.27	
3	-51.86	38.81	71.84	65.77	
4	-44.30	53.44	70.98	75.23	
5	-38.64	39.81	59.69	60.32	
6	-51.08	40.75	71.21	66.40	
7	-45.69	53.26	71.34	74.87	
8	-38.31	39.69	59.64	60.37	
9	-50.34	42.74	70.57	67.04	
10	-36.69	52.69	69.38	76.83	
11	-40.76	42.56	59.52	60.49	
12	-51.81	32.67	73.26	64.35	

*** CARATTERISTICHE DELLA SOLLECITAZIONE PILASTRI ***

* PILASTRO N *	Msup	* Minf	* Tsup	* Tinf	* Nsup	* Ninf	*
1	17.99	8.33	-8.77	8.77	582.79	596.29	
5	23.63	24.96	-16.20	16.20	433.70	447.20	
9	19.24	20.68	-13.31	13.31	284.22	297.72	
13	36.69	26.45	-21.05	21.05	134.38	147.88	
2	-5.87	-3.38	3.09	-3.09	563.59	572.59	
6	-8.69	-8.97	5.89	-5.89	419.25	428.25	
10	-5.83	-6.11	3.98	-3.98	277.59	284.34	
14	-11.93	-9.14	7.02	-7.02	136.35	143.10	
3	5.05	2.08	-2.38	2.38	550.79	559.79	
7	6.71	6.91	-4.54	4.54	409.69	418.69	
11	4.36	4.57	-2.98	2.98	271.42	278.17	
15	9.25	6.30	-5.19	5.19	133.74	140.49	
4	-15.90	-8.29	8.07	-8.07	415.80	422.55	
8	-21.64	-22.92	14.85	-14.85	310.28	317.03	
12	-17.79	-19.12	12.30	-12.30	204.14	210.89	
16	-32.67	-24.96	19.21	-19.21	97.35	104.10	

ARMATURA TRAVI

```

*-----*
*   <<<DATI DI PROGETTO>>>   *
*-----*

*-----*
*   CLS Rbk =    25    N/mm2 *
*-----*
*   Coeff. n =    15    *
*-----*
*    $\sigma_c$  amm =    8.50 N/mm2 *
*-----*
*    $\sigma_f$  amm =    220    N/mm2 *
*-----*
*    $\tau_{c0}$  =    0.53 N/mm2 *
*-----*
*    $\tau_{c1}$  =    1.69 N/mm2 *
*-----*
*   Scr.Staffe =    99    %   *
*-----*
*   Incr.Mcamp =    10    %   *
*-----*

```

*** TRAVE N.ro 1 ***

<<< IMP. 1 - CAMP. 1 >>>

```

Luce di calcolo = 4.30 m          Base = 90    cm          Q = 34.00 KN/m
Luce netta = 4.00 m              Altezza = 25    cm
Staffe  $\phi$  8 a 2 bracci          Copriferro = 2.5 cm

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```

*   PILASTRO A SIN.   *   CAMPATA   *   PILASTRO A DES.   *
*-----*
* ASSE Pil. * FILO Pil. *           * FILO Pil. * ASSE Pil. *

```

δx M<0 (m)*	0.74			0.88
x Mmax (m)*			2.07	
M calc(KNm)*	-42.95	-32.74	30.35	-42.77
M incr(KNm)*			35.18	
F sup (cmq)*	9.69	7.29	===	9.64
F inf (cmq)*	===	===	7.86	===
σ_c (N/mm ²)*	6.71	5.68	5.94	6.71
Taglio (KN)*		65.50		70.51
Scorrim(KN)*		===		===
F pieg(cmq)*		===		===
P staffe(m)*		===	===	===
δ staffe(m)*		===	4.00	===
τ_c (N/mm ²)*		0.36		0.39

===Passo minimo Staffe = .18 m

Fmin.= 3.04 cmq

*** TRAVE N.ro 2 *** <<< IMP. 1 - CAMP. 2 >>>

Luce di calcolo = 3.75 m Base = 60 cm Q = 32.00 KN/m
 Luce netta = 3.45 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

	* PILASTRO A SIN. *	* CAMPATA *	* PILASTRO A DES. *	
	* ASSE Pil. *	* FILO Pil. *	* FILO Pil. *	* ASSE Pil. *
δx M<0 (m)*	0.84			0.85
x Mmax (m)*		1.86		
M calc(KNm)*	-38.89	-30.29	16.86	-31.22
M incr(KNm)*		20.80		-39.91
F sup (cmq)*	8.92	6.85	===	7.07
F inf (cmq)*	===	===	4.62	===
σc (N/mm ²)*	8.17	6.97	5.51	7.11
				8.30
Taglio (KN)*	54.94		55.47	
Scorrim(KN)*	===		===	
F pieg(cmq)*	===		===	
P staffe(m)*	===	===	===	
δ staffe(m)*	===	3.45	===	
τc (N/mm ²)*	0.45		0.46	

===Passo minimo Staffe = .18 m

Fmin.= 2.03 cmq

*** TRAVE N.ro 3 *** <<< IMP. 1 - CAMP. 3 >>>

Luce di calcolo = 4.30 m Base = 60 cm Q = 32.00 KN/m
 Luce netta = 4.00 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

	* PILASTRO A SIN. *	* CAMPATA *	* PILASTRO A DES. *	
	* ASSE Pil. *	* FILO Pil. *	* FILO Pil. *	* ASSE Pil. *
δx M<0 (m)*	0.90			0.71
x Mmax (m)*		2.24		
M calc(KNm)*	-51.86	-41.45	28.78	-29.31
M incr(KNm)*		33.31		-38.81
F sup (cmq)*	11.90	9.53	===	6.62
F inf (cmq)*	5.78	===	7.57	===
σc (N/mm ²)*	8.50	8.47	7.37	6.81
				8.10
Taglio (KN)*	67.04		60.97	
Scorrim(KN)*	22.73		===	
F pieg(cmq)*	===		===	
P staffe(m)*	0.06	===	===	
δ staffe(m)*	0.07	3.93	===	
τc (N/mm ²)*	0.55		0.50	

===Passo minimo Staffe = .18 m

Fmin.= 2.03 cmq

*** TRAVE N.ro 4 *** <<< IMP. 2 - CAMP. 1 >>>

Luce di calcolo = 4.30 m Base = 90 cm Q = 34.00 KN/m
 Luce netta = 4.00 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.76			0.88	
x Mmax (m)*			2.08		
M calc(KNm)*	-44.30	-34.04	29.79	-42.54	-53.44
M incr(KNm)*			34.67		
F sup (cmq)*	10.01	7.59	===	9.59	12.19
F inf (cmq)*	===	===	7.74	===	===
σ (N/mm ²)*	6.84	5.81	5.88	6.67	7.70
Taglio (KN)*		65.88		70.13	
Scorrim(KN)*		===		===	
F pieg(cmq)*		===		===	
P staffe(m)*		===	===	===	
δ staffe(m)*		===	4.00	===	
τ (N/mm ²)*		0.36		0.38	

===Passo minimo Staffe = .18 m

Fmin.= 3.04 cmq

*** TRAVE N.ro 5 *** <<< IMP. 2 - CAMP. 2 >>>

Luce di calcolo = 3.75 m Base = 60 cm Q = 32.00 KN/m
 Luce netta = 3.45 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.83			0.85	
x Mmax (m)*			1.86		
M calc(KNm)*	-38.64	-30.05	17.03	-31.13	-39.81
M incr(KNm)*			20.96		
F sup (cmq)*	8.85	6.79	===	7.05	9.13
F inf (cmq)*	===	===	4.66	===	===
σ (N/mm ²)*	8.10	6.91	5.54	7.07	8.23
Taglio (KN)*		54.89		55.52	
Scorrim(KN)*		===		===	
F pieg(cmq)*		===		===	
P staffe(m)*		===	===	===	
δ staffe(m)*		===	3.45	===	
τ (N/mm ²)*		0.45		0.46	

===Passo minimo Staffe = .18 m

Fmin.= 2.03 cmq

*** TRAVE N.ro 6 *** <<< IMP. 2 - CAMP. 3 >>>

Luce di calcolo = 4.30 m Base = 60 cm Q = 32.00 KN/m
 Luce netta = 4.00 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.89			0.74	
x Mmax (m)*			2.22		
M calc(KNm)*	-51.08	-40.76	28.14	-31.15	-40.75
M incr(KNm)*			32.73		
F sup (cmq)*	11.72	9.36	===	7.05	9.36
F inf (cmq)*	5.34	===	7.43	===	===
σc (N/mmq)*	8.50	8.37	7.30	7.07	8.37

Taglio (KN)*		66.41		61.60	
Scorrim(KN)*		16.22		===	
F pieg(cmq)*		===		===	
P staffe(m)*		0.06	===	===	
δ staffe(m)*		0.05	3.95	===	
τc (N/mmq)*		0.55		0.51	

===Passo minimo Staffe = .18 m

Fmin.= 2.03 cmq

*** TRAVE N.ro 7 *** <<< IMP. 3 - CAMP. 1 >>>

Luce di calcolo = 4.30 m Base = 90 cm Q = 34.00 KN/m
 Luce netta = 4.00 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.78			0.89	
x Mmax (m)*			2.09		
M calc(KNm)*	-45.69	-35.37	29.16	-42.42	-53.26
M incr(KNm)*			34.11		
F sup (cmq)*	10.34	7.90	===	9.56	12.15
F inf (cmq)*	===	===	7.61	===	===
σc (N/mmq)*	6.97	5.94	5.81	6.64	7.70

Taglio (KN)*		66.24		69.77	
Scorrim(KN)*		===		===	
F pieg(cmq)*		===		===	
P staffe(m)*		===	===	===	
δ staffe(m)*		===	4.00	===	
τc (N/mmq)*		0.36		0.38	

===Passo minimo Staffe = .18 m

Fmin.= 3.04 cmq

*** TRAVE N.ro 8 *** <<< IMP. 3 - CAMP. 2 >>>

Luce di calcolo = 3.75 m Base = 60 cm Q = 32.00 KN/m
 Luce netta = 3.45 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *
 ----------*-----*
 * ASSE Pil. * FILO Pil. * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.82			0.84	
x Mmax (m)*			1.86		
M calc(KNm)*	-38.31	-29.72	17.26	-30.99	-39.69
M incr(KNm)*			21.16		
F sup (cmq)*	8.77	6.71	==	7.01	9.10
F inf (cmq)*	==	==	4.70	==	==
σc (N/mm ²)*	8.03	6.84	5.58	7.04	8.23

Taglio (KN)*		54.84		55.57	
Scorrim(KN)*		==		==	
F pieg(cmq)*		==		==	
P staffe(m)*		==	==	==	
δ staffe(m)*		==	3.45	==	
τc (N/mm ²)*		0.45		0.46	

==Passo minimo Staffe = .18 m

Fmin.= 2.03 cmq

*** TRAVE N.ro 9 *** <<< IMP. 3 - CAMP. 3 >>>

Luce di calcolo = 4.30 m Base = 60 cm Q = 32.00 KN/m
 Luce netta = 4.00 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *
 ----------*-----*
 * ASSE Pil. * FILO Pil. * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.89			0.78	
x Mmax (m)*			2.20		
M calc(KNm)*	-50.34	-40.12	27.48	-33.04	-42.74
M incr(KNm)*			32.13		
F sup (cmq)*	11.56	9.21	==	7.50	9.83
F inf (cmq)*	4.93	==	7.29	==	0.65
σc (N/mm ²)*	8.50	8.30	7.24	7.34	8.50

Taglio (KN)*		65.77		62.24	
Scorrim(KN)*		9.76		==	
F pieg(cmq)*		==		==	
P staffe(m)*		0.06	==	==	
δ staffe(m)*		0.02	3.97	==	
τc (N/mm ²)*		0.54		0.51	

==Passo minimo Staffe = .18 m

Fmin.= 2.03 cmq

*** TRAVE N.ro 10 *** <<< IMP. 4 - CAMP. 1 >>>

Luce di calcolo = 4.30 m Base = 90 cm Q = 34.00 KN/m
 Luce netta = 4.00 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.62			0.84
x Mmax (m)*			2.04	
M calc(KNm)*	-36.69	-26.66	34.11	-41.54
M incr(KNm)*			38.58	
F sup (cmq)*	8.21	5.88	===	9.35
F inf (cmq)*	===	===	8.65	===
σc (N/mm ²)*	6.08	5.01	6.28	6.57

Taglio (KN)*	64.28		71.73
Scorrim(KN)*	===		===
F pieg(cmq)*	===		===
P staffe(m)*	===	===	===
δ staffe(m)*	===	4.00	===
τc (N/mm ²)*	0.35		0.39

===Passo minimo Staffe = .18 m

Fmin.= 3.04 cmq

*** TRAVE N.ro 11 *** <<< IMP. 4 - CAMP. 2 >>>

Luce di calcolo = 3.75 m Base = 60 cm Q = 32.00 KN/m
 Luce netta = 3.45 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.90			0.93
x Mmax (m)*			1.85	
M calc(KNm)*	-40.76	-32.19	14.60	-33.85
M incr(KNm)*			18.77	
F sup (cmq)*	9.36	7.30	===	7.70
F inf (cmq)*	===	===	4.15	===
σc (N/mm ²)*	8.37	7.24	5.18	7.44

Taglio (KN)*	54.72		55.69
Scorrim(KN)*	===		===
F pieg(cmq)*	===		===
P staffe(m)*	===	===	===
δ staffe(m)*	===	3.45	===
τc (N/mm ²)*	0.45		0.46

===Passo minimo Staffe = .18 m

Fmin.= 2.03 cmq

*** TRAVE N.ro 12 *** <<< IMP. 4 - CAMP. 3 >>>

Luce di calcolo = 4.30 m Base = 60 cm Q = 32.00 KN/m
 Luce netta = 4.00 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.87			0.59
x Mmax (m)*			2.28	
M calc(KNm)*	-51.81	-41.18	32.04	-23.38
M incr(KNm)*			36.27	
F sup (cmq)*	11.89	9.47	===	5.22
F inf (cmq)*	5.75	===	8.28	===
σc (N/mm ²)*	8.50	8.43	7.77	5.91
Taglio (KN)*		68.46		59.55
Scorrim(KN)*		37.54		===
F pieg(cmq)*		0.01		===
P staffe(m)*		0.06	===	===
δ staffe(m)*		0.10	3.89	===
τc (N/mm ²)*		0.56		0.49

===Passo minimo Staffe = .18 m

Fmin.= 2.03 cmq

ARMATURA PILASTRI

```

*-----*
*   <<<DATI DI PROGETTO>>>   *
*-----*

```

```

*-----*
*   CLS Rbk =    25    N/mm2 *
*-----*
*   Coeff. n =    15    *
*-----*
*   σc amm =    8.50 N/mm2 *
*-----*
*   σc med.amm =    5.95 N/mm2 *
*-----*
*   σf amm =    220    N/mm2 *
*-----*
*   τc0 =    0.53 N/mm2 *
*-----*

```

* P *	* Base *	* Alt. *	* N *	* M *	* F=F' *	* σc max *	* σf max *	* Nmax/Aci *	* Ftot *
* I *	*-----*	*-----*	*-----*	*-----*	*-----*	*-----*	*-----*	*-----*	*-----*
* L *	(cm)	(cm)	(KN)	(KNm)	(cmq)	(N/mm ²)	(N/mm ²)	(N/mm ²)	(%A)
1	60	30	596.29	8.32	4.01	-3.92	===	-3.11	0.45
5	60	30	447.19	24.96	3.01	-4.88	1.26	-2.37	0.33
9	60	30	297.72	20.67	2.70	-3.68	21.23	-1.58	0.30
13	60	30	134.38	36.68	3.88	-6.97	214.80	-0.77	0.43
2	40	30	572.58	-3.38	3.85	-4.82	===	-4.35	0.64
6	40	30	428.24	-8.97	2.88	-4.63	===	-3.33	0.48
10	30	30	284.33	-6.11	1.91	-4.17	===	-2.97	0.42
14	30	30	143.09	-9.13	1.35	-3.38	10.00	-1.52	0.30
3	40	30	559.79	2.08	3.76	-4.55	===	-4.26	0.63
7	40	30	418.68	6.91	2.81	-4.26	===	-3.26	0.47
11	30	30	278.17	4.56	1.87	-3.81	===	-2.91	0.42
15	30	30	140.48	6.30	1.35	-2.77	===	-1.49	0.30
4	30	30	422.54	-8.28	2.84	-5.83	===	-4.29	0.63
8	30	30	317.03	-22.91	2.33	-7.65	27.35	-3.27	0.52
12	30	30	210.88	-19.12	1.42	-6.75	37.15	-2.24	0.32
16	30	30	97.35	-32.66	4.63	-8.50	191.07	-1.00	1.03

STUDIO TECNICO : ING. PIETRO DE LEONARDIS

17/04/1994

INDIRIZZO : VIA FORCELLA, 75

CITTA' : FASANO

CANTIERE : CEGLIE 9.10.11.12.13.14.15.16 F

GEOMETRIA STRUTTURALE

N.ro IMPALCATI = 4

N.ro CAMPATE = 7

modulo E = 25000 N/mm²

*** GEOMETRIA DELLE TRAVI ***

* IMPALCATO *	TRAVERSE N.	* LUCE(m)	* BASE(cm)	* ALT.(cm)	* M. D'INERZIA(m ⁴) *
1	1	3.25	100	25	0.1302E-02
	2	3.45	100	25	0.1302E-02
	3	3.45	100	25	0.1302E-02
	4	3.45	100	25	0.1302E-02
	5	4.40	100	25	0.1302E-02
	6	3.75	100	25	0.1302E-02
	7	4.20	100	25	0.1302E-02
2	8	3.25	100	25	0.1302E-02
	9	3.45	100	25	0.1302E-02
	10	3.45	100	25	0.1302E-02
	11	3.45	100	25	0.1302E-02
	12	4.40	100	25	0.1302E-02
	13	3.75	100	25	0.1302E-02
	14	4.20	100	25	0.1302E-02
3	15	3.25	100	25	0.1302E-02
	16	3.45	100	25	0.1302E-02
	17	3.45	100	25	0.1302E-02
	18	3.45	100	25	0.1302E-02
	19	4.40	100	25	0.1302E-02
	20	3.75	100	25	0.1302E-02
	21	4.20	100	25	0.1302E-02
4	22	3.25	100	25	0.1302E-02
	23	3.45	100	25	0.1302E-02
	24	3.45	100	25	0.1302E-02
	25	3.45	100	25	0.1302E-02
	26	4.40	100	25	0.1302E-02
	27	3.75	100	25	0.1302E-02
	28	4.20	100	25	0.1302E-02

*** GEOMETRIA DEI PILASTRI ***

* PILASTRATA *	PIL. N. *	LUCE(m)	BASE(cm)	ALT.(cm)	M. D'INERZIA(m ⁴) *
1	1	3.00	50	30	0.1125E-02
	9	3.00	40	30	0.9000E-03
	17	3.00	40	30	0.9000E-03
	25	3.00	40	30	0.9000E-03
2	2	3.00	30	50	0.3125E-02
	10	3.00	30	40	0.1600E-02
	18	3.00	30	30	0.6750E-03
	26	3.00	30	30	0.6750E-03
3	3	3.00	30	50	0.3125E-02
	11	3.00	30	40	0.1600E-02
	19	3.00	30	30	0.6750E-03
	27	3.00	30	30	0.6750E-03
4	4	3.00	50	30	0.1125E-02
	12	3.00	40	30	0.9000E-03
	20	3.00	40	30	0.9000E-03
	28	3.00	30	30	0.6750E-03
5	5	3.00	40	30	0.9000E-03
	13	3.00	40	30	0.9000E-03
	21	3.00	40	30	0.9000E-03
	29	3.00	30	30	0.6750E-03
6	6	3.00	30	50	0.3125E-02
	14	3.00	30	40	0.1600E-02
	22	3.00	30	30	0.6750E-03
	30	3.00	30	30	0.6750E-03
7	7	3.00	30	50	0.3125E-02
	15	3.00	30	40	0.1600E-02
	23	3.00	30	30	0.6750E-03
	31	3.00	30	30	0.6750E-03
8	8	3.00	50	30	0.1125E-02
	16	3.00	40	30	0.9000E-03
	24	3.00	40	30	0.9000E-03
	32	3.00	40	30	0.9000E-03

CONDIZIONE DI CARICO

*** CARICHI NODALI ***

* IMPALCATO	* NODO	* COPPIA(KNm)	* Pvert(KN)
1	1	0.00	62.00
	4	0.00	37.00
	5	0.00	37.00
	8	0.00	62.00
2	9	0.00	62.00
	12	0.00	37.00
	13	0.00	37.00
	16	0.00	62.00
3	17	0.00	62.00
	20	0.00	37.00
	21	0.00	37.00
	24	0.00	62.00
4	25	0.00	62.00
	28	0.00	37.00
	29	0.00	37.00
	32	0.00	62.00

*** CARICHI UNIFORMI SULLE TRAVI ***

* IMPALCATO	* TRAVE N.	* Q(KN/m)
1	1	41.00
	2	41.00
	3	41.00
	4	41.00
	5	41.00
	6	41.00
	7	41.00
2	8	41.00
	9	41.00
	10	41.00
	11	41.00
	12	41.00
	13	41.00
	14	41.00
3	15	41.00
	16	41.00
	17	41.00
	18	41.00

* IMPALCATO * TRAVE N. * Q (KN/m) *		
	19	41.00
	20	41.00
	21	41.00
4	22	41.00
	23	41.00
	24	41.00
	25	41.00
	26	41.00
	27	41.00
	28	41.00

SPOSTAMENTI DI PIANO

(unita' di misura: cm)

* IMPALC.N. *	* SPOSTAMENTO *

1	-0.003
2	-0.008
3	-0.015
4	-0.028

CARATTERISTICHE DELLA SOLLECITAZIONE

(unita' di misura: KN,m)

*** CARATTERISTICHE DELLA SOLLECITAZIONE TRAVI ***

* TRAVE N.	* Msin	* Mdes	* Tsin	* Tdes	*
1	-24.83	41.28	61.57	71.69	
2	-41.38	40.09	71.10	70.36	
3	-41.53	39.40	71.35	70.11	
4	-38.28	47.15	68.16	73.30	
5	-62.04	66.09	89.28	91.13	
6	-50.09	48.94	77.19	76.57	
7	-66.61	44.19	91.44	80.77	
8	-25.64	40.85	61.95	71.31	
9	-41.39	40.12	71.10	70.36	
10	-41.47	39.46	71.31	70.15	
11	-38.64	46.35	68.50	72.96	
12	-63.42	64.31	90.00	90.41	
13	-50.95	49.79	77.19	76.57	
14	-64.77	45.59	90.67	81.54	
15	-27.30	40.23	62.65	70.61	
16	-41.23	40.03	71.08	70.38	
17	-41.77	39.19	71.48	69.98	
18	-38.72	46.44	68.49	72.97	
19	-63.85	63.25	90.34	90.07	
20	-52.02	49.63	77.52	76.24	
21	-63.27	47.92	89.76	82.45	
22	-19.03	42.77	59.33	73.93	
23	-42.76	39.98	71.54	69.92	
24	-41.60	38.10	71.74	69.72	
25	-37.54	51.16	66.78	74.68	
26	-61.62	61.22	90.30	90.11	
27	-53.36	54.32	76.62	77.14	
28	-65.04	34.81	93.30	78.91	

*** CARATTERISTICHE DELLA SOLLECITAZIONE PILASTRI ***

* PILASTRO N *	Msup	* Minf	* Tsup	* Tinf	* Nsup	* Ninf
1	11.34	5.93	-5.76	5.76	520.48	531.73
9	13.20	13.50	-8.90	8.90	387.92	396.92
17	11.77	12.45	-8.08	8.08	254.97	263.97
25	19.03	15.54	-11.52	11.52	121.33	130.33
2	-0.13	0.65	-0.18	0.18	594.82	606.07
10	0.21	0.23	-0.15	0.15	443.04	452.04
18	0.41	0.33	-0.25	0.25	293.89	300.64
26	-0.01	0.60	-0.20	0.20	145.46	152.21
3	0.61	1.02	-0.54	0.54	589.37	600.62
11	0.87	0.84	-0.57	0.57	438.68	447.68
19	0.41	0.48	-0.30	0.30	290.26	297.01
27	1.62	1.34	-0.99	0.99	141.66	148.41
4	-0.61	-0.05	0.22	-0.22	724.60	735.85
12	-0.50	-0.52	0.34	-0.34	540.34	549.34
20	-0.39	-0.33	0.24	-0.24	355.71	364.71
28	-0.57	-0.10	0.23	-0.23	173.49	180.24
5	6.01	3.21	-3.08	3.08	826.55	835.55
13	8.56	8.88	-5.81	5.81	617.97	626.97
21	8.58	8.52	-5.70	5.70	409.02	418.02
29	10.47	8.83	-6.44	6.44	201.97	208.72
6	-8.51	-3.54	4.02	-4.02	692.70	703.95
14	-8.83	-7.51	5.45	-5.45	515.40	524.40
22	-4.97	-4.54	3.17	-3.17	341.06	347.81
30	-7.87	-6.28	4.72	-4.72	166.73	173.48
7	9.06	5.25	-4.77	4.77	694.17	705.42
15	9.92	8.61	-6.18	6.18	517.16	526.16
23	5.23	5.07	-3.44	3.44	343.18	349.93
31	10.73	8.41	-6.38	6.38	170.43	177.18
8	-20.32	-9.91	10.08	-10.08	598.65	609.90
16	-23.57	-23.88	15.82	-15.82	446.89	455.89
24	-21.00	-22.02	14.34	-14.34	294.35	303.35
32	-34.81	-26.93	20.58	-20.58	140.91	149.91

ARMATURA TRAVI

```

*-----*
*   <<<DATI DI PROGETTO>>>   *
*-----*

*-----*
*   CLS Rbk =    25    N/mm2 *
*-----*
*   Coeff. n =    15    *
*-----*
*    $\sigma_c$  amm =    8.50 N/mm2 *
*-----*
*    $\sigma_f$  amm =    220    N/mm2 *
*-----*
*    $\tau_{c0}$  =    0.53 N/mm2 *
*-----*
*    $\tau_{c1}$  =    1.69 N/mm2 *
*-----*
*   Scr.Staffe =    99    %    *
*-----*
*   Incr.Mcamp =    10    %    *
*-----*

```

*** TRAVE N.ro 1 ***

<<< IMP. 1 - CAMP. 1 >>>

Luce di calcolo = 3.25 m

Base = 100 cm

Q = 41.00 KN/m

Luce netta = 2.85 m

Altezza = 25 cm

Staffe ϕ 8 a 2 bracci

Copriferro = 2.5 cm

```

*   PILASTRO A SIN.   *   CAMPATA   *   PILASTRO A DES.   *
*-----*
* ASSE Pil. * FILO Pil. *           * FILO Pil. * ASSE Pil. *

```

δx M<0 (m) *	0.47				0.72
x Mmax (m) *			1.50		
M calc(KNm) *	-24.83	-16.06	21.40	-24.64	-41.28
M incr(KNm) *			24.71		
F sup (cmq) *	5.44	3.46	===	5.40	9.24
F inf (cmq) *	===	===	5.41	===	===
σ_c (N/mm ²) *	4.52	3.51	4.52	4.50	6.14
Taglio (KN) *		55.42		61.44	
Scorrim(KN) *		===		===	
F pieg(cmq) *		===		===	
P staffe(m) *		===	===	===	
δ staffe(m) *		===	2.84	===	
τ_c (N/mm ²) *		0.27		0.30	

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 2 ***

<<< IMP. 1 - CAMP. 2 >>>

Luce di calcolo = 3.45 m

Base = 100 cm

Q = 41.00 KN/m

Luce netta = 2.95 m

Altezza = 25 cm

Staffe ϕ 8 a 2 bracci

Copriferro = 2.5 cm

	* PILASTRO A SIN. *	* CAMPATA *	* PILASTRO A DES. *	
	* ASSE Pil. *	* FILO Pil. *	* FILO Pil. *	* ASSE Pil. *
$\delta x M < 0$ (m) *	0.73			0.72
x Mmax (m) *		1.73		
M calc(KNm) *	-41.38	-24.89	20.27	-23.79
M incr(KNm) *			24.35	-40.09
F sup (cmq) *	9.27	5.45	==	5.20
F inf (cmq) *	==	==	5.33	==
σc (N/mmq) *	6.14	4.52	4.47	4.42
				6.04
Taglio (KN) *		60.85		60.11
Scorrim(KN) *		==		==
F pieg(cmq) *		==		==
P staffe(m) *		==	==	==
δ staffe(m) *		==	2.95	==
τc (N/mmq) *		0.30		0.30
==Passo minimo Staffe = .18 m				Fmin.= 3.38 cmq

*** TRAVE N.ro 3 ***

<<< IMP. 1 - CAMP. 3 >>>

Luce di calcolo = 3.45 m

Base = 100 cm

Q = 41.00 KN/m

Luce netta = 3.05 m

Altezza = 25 cm

Staffe ϕ 8 a 2 bracci

Copriferro = 2.5 cm

	* PILASTRO A SIN. *	* CAMPATA *	* PILASTRO A DES. *	
	* ASSE Pil. *	* FILO Pil. *	* FILO Pil. *	* ASSE Pil. *
$\delta x M < 0$ (m) *	0.73			0.70
x Mmax (m) *		1.74		
M calc(KNm) *	-41.53	-24.98	20.55	-29.34
M incr(KNm) *			24.60	-39.40
F sup (cmq) *	9.30	5.47	==	6.47
F inf (cmq) *	==	==	5.39	==
σc (N/mmq) *	6.18	4.53	4.50	4.98
				5.98
Taglio (KN) *		61.10		63.96
Scorrim(KN) *		==		==
F pieg(cmq) *		==		==
P staffe(m) *		==	==	==
δ staffe(m) *		==	3.05	==
τc (N/mmq) *		0.30		0.31
==Passo minimo Staffe = .18 m				Fmin.= 3.38 cmq

*** TRAVE N.ro 4 ***

<<< IMP. 1 - CAMP. 4 >>>

Luce di calcolo = 3.45 m

Base = 100 cm

Q = 41.00 KN/m

Luce netta = 3.15 m

Altezza = 25 cm

Staffe ϕ 8 a 2 bracci

Copriferro = 2.5 cm

* PILASTRO A SIN. *	* CAMPATA *	* PILASTRO A DES. *
* ASSE Pil. *	* FILO Pil. *	* FILO Pil. *
* ASSE Pil. *		* ASSE Pil. *

δx M<0 (m)*	0.71			0.84
x Mmax (m)*			1.66	
M calc(KNm)*	-38.28	-28.51	18.38	-36.62
M incr(KNm)*			22.65	
F sup (cmq)*	8.54	6.28	===	8.15
F inf (cmq)*	===	===	4.94	===
σ_c (N/mm ²)*	5.84	4.91	4.28	5.71
Taglio (KN)*		62.01		67.15
Scorrim(KN)*		===		===
F pieg(cmq)*		===		===
P staffe(m)*		===	===	===
δ staffe(m)*		===	3.15	===
τ_c (N/mm ²)*		0.31		0.33

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 5 ***

<<< IMP. 1 - CAMP. 5 >>>

Luce di calcolo = 4.40 m

Base = 100 cm

Q = 41.00 KN/m

Luce netta = 4.00 m

Altezza = 25 cm

Staffe ϕ 8 a 2 bracci

Copriferro = 2.5 cm

* PILASTRO A SIN. *	* CAMPATA *	* PILASTRO A DES. *
* ASSE Pil. *	* FILO Pil. *	* FILO Pil. *
* ASSE Pil. *		* ASSE Pil. *

δx M<0 (m)*	0.86			0.91
x Mmax (m)*			2.17	
M calc(KNm)*	-62.04	-49.11	35.17	-44.59
M incr(KNm)*			41.58	
F sup (cmq)*	14.18	11.09	===	10.02
F inf (cmq)*	===	===	9.32	===
σ_c (N/mm ²)*	7.90	6.84	6.18	6.44
Taglio (KN)*		83.13		80.88
Scorrim(KN)*		===		===
F pieg(cmq)*		===		===
P staffe(m)*		===	===	===
δ staffe(m)*		===	4.00	===
τ_c (N/mm ²)*		0.41		0.40

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 6 ***

<<< IMP. 1 - CAMP. 6 >>>

Luce di calcolo = 3.75 m

Base = 100 cm

Q = 41.00 KN/m

Luce netta = 3.25 m

Altezza = 25 cm

Staffe ϕ 8 a 2 bracci

Copriferro = 2.5 cm

* PILASTRO A SIN. *	* CAMPATA *	* PILASTRO A DES. *
* ASSE Pil. *	* FILO Pil. *	* FILO Pil. *
* ASSE Pil. *		* ASSE Pil. *

δx M<0 (m) *	0.83			0.81
x Mmax (m) *			1.88	
M calc(KNm) *	-50.09	-32.07	22.57	-31.08
M incr(KNm) *			27.52	
F sup (cmq) *	11.32	7.10	==	6.87
F inf (cmq) *	==	==	6.05	==
σ_c (N/mm ²) *	6.91	5.25	4.81	5.16

Taglio (KN) *	66.94		66.32
Scorrim(KN) *	==		==
F pieg(cmq) *	==		==
P staffe(m) *	==		==
δ staffe(m) *	==	3.25	==
τ_c (N/mm ²) *	0.33		0.33

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 7 ***

<<< IMP. 1 - CAMP. 7 >>>

Luce di calcolo = 4.20 m

Base = 100 cm

Q = 41.00 KN/m

Luce netta = 3.80 m

Altezza = 25 cm

Staffe ϕ 8 a 2 bracci

Copriferro = 2.5 cm

* PILASTRO A SIN. *	* CAMPATA *	* PILASTRO A DES. *
* ASSE Pil. *	* FILO Pil. *	* FILO Pil. *
* ASSE Pil. *		* ASSE Pil. *

δx M<0 (m) *	0.91			0.65
x Mmax (m) *			2.23	
M calc(KNm) *	-66.61	-45.03	35.36	-32.54
M incr(KNm) *			40.90	
F sup (cmq) *	15.30	10.13	==	7.21
F inf (cmq) *	==	==	9.16	==
σ_c (N/mm ²) *	8.30	6.47	6.11	5.31

Taglio (KN) *	81.19		74.62
Scorrim(KN) *	==		==
F pieg(cmq) *	==		==
P staffe(m) *	==		==
δ staffe(m) *	==	3.80	==
τ_c (N/mm ²) *	0.40		0.37

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 8 ***

<<< IMP. 2 - CAMP. 1 >>>

Luce di calcolo = 3.25 m

Base = 100 cm

Q = 41.00 KN/m

Luce netta = 2.90 m

Altezza = 25 cm

Staffe ϕ 8 a 2 bracci

Copriferro = 2.5 cm

* PILASTRO A SIN. *	* CAMPATA *	* PILASTRO A DES. *
* ASSE Pil. *	* FILO Pil. *	* FILO Pil. *
* ASSE Pil. *		* ASSE Pil. *

δx M<0 (m) *	0.49			0.72
x Mmax (m) *			1.51	
M calc(KNm) *	-25.64	-16.81	21.16	-27.41
M incr(KNm) *			24.49	
F sup (cmq) *	5.62	3.63	===	6.03
F inf (cmq) *	===	===	5.36	===
σ_c (N/mm ²) *	4.62	3.60	4.48	4.78
Taglio (KN) *		55.80		63.11
Scorrim(KN) *		===		===
F pieg(cmq) *		===		===
P staffe(m) *		===	===	===
δ staffe(m) *		===	2.90	===
τ_c (N/mm ²) *		0.28		0.31

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 9 ***

<<< IMP. 2 - CAMP. 2 >>>

Luce di calcolo = 3.45 m

Base = 100 cm

Q = 41.00 KN/m

Luce netta = 3.05 m

Altezza = 25 cm

Staffe ϕ 8 a 2 bracci

Copriferro = 2.5 cm

* PILASTRO A SIN. *	* CAMPATA *	* PILASTRO A DES. *
* ASSE Pil. *	* FILO Pil. *	* FILO Pil. *
* ASSE Pil. *		* ASSE Pil. *

δx M<0 (m) *	0.74			0.72
x Mmax (m) *			1.73	
M calc(KNm) *	-41.39	-27.99	20.26	-26.87
M incr(KNm) *			24.33	
F sup (cmq) *	9.27	6.16	===	5.90
F inf (cmq) *	===	===	5.32	===
σ_c (N/mm ²) *	6.14	4.85	4.47	4.73
Taglio (KN) *		62.90		62.16
Scorrim(KN) *		===		===
F pieg(cmq) *		===		===
P staffe(m) *		===	===	===
δ staffe(m) *		===	3.05	===
τ_c (N/mm ²) *		0.31		0.31

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 10 *** <<< IMP. 2 - CAMP. 3 >>>

Luce di calcolo = 3.45 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.10 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

	* PILASTRO A SIN. *	* CAMPATA *	* PILASTRO A DES. *	
	* ASSE Pil. *	* FILO Pil. *	* FILO Pil. *	* ASSE Pil. *
$\delta x M < 0$ (m) *	0.73			0.70
x Mmax (m) *		1.73		
M calc (KNm) *	-41.47	-28.03	20.55	-29.40 -39.46
M incr (KNm) *			24.60	
F sup (cmq) *	9.29	6.17	===	6.48 8.82
F inf (cmq) *	===	===	5.39	===
σc (N/mm ²) *	6.14	4.85	4.50	5.00 5.98
Taglio (KN) *		63.11		64.00
Scorrim (KN) *		===		===
F pieg (cmq) *		===		===
P staffe (m) *		===	===	===
δ staffe (m) *		===	3.10	===
τc (N/mm ²) *		0.31		0.32

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 11 *** <<< IMP. 2 - CAMP. 4 >>>

Luce di calcolo = 3.45 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.15 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

	* PILASTRO A SIN. *	* CAMPATA *	* PILASTRO A DES. *	
	* ASSE Pil. *	* FILO Pil. *	* FILO Pil. *	* ASSE Pil. *
$\delta x M < 0$ (m) *	0.71			0.82
x Mmax (m) *		1.67		
M calc (KNm) *	-38.64	-28.83	18.57	-35.87 -46.35
M incr (KNm) *			22.82	
F sup (cmq) *	8.62	6.35	===	7.98 10.44
F inf (cmq) *	===	===	4.98	===
σc (N/mm ²) *	5.88	4.95	4.30	5.64 6.57
Taglio (KN) *		62.35		66.81
Scorrim (KN) *		===		===
F pieg (cmq) *		===		===
P staffe (m) *		===	===	===
δ staffe (m) *		===	3.15	===
τc (N/mm ²) *		0.31		0.33

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 12 *** <<< IMP. 2 - CAMP. 5 >>>

Luce di calcolo = 4.40 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 4.05 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *
 ----------*-----*
 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.88			0.89	
x Mmax (m)*			2.19		
M calc(KNm)*	-63.42	-50.38	35.37	-47.05	-64.31
M incr(KNm)*			41.75		
F sup (cmq)*	14.52	11.39	===	10.60	14.74
F inf (cmq)*	===	===	9.35	===	===
σc (N/mmq)*	8.03	6.94	6.18	6.64	8.10

Taglio (KN)*	83.85		82.21	
Scorrim(KN)*	===		===	
F pieg(cmq)*	===		===	
P staffe(m)*	===		===	
δ staffe(m)*	===	4.05	===	
τc (N/mmq)*	0.41		0.41	

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 13 *** <<< IMP. 2 - CAMP. 6 >>>

Luce di calcolo = 3.75 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.35 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *
 ----------*-----*
 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

δx M<0 (m)*	0.85			0.83	
x Mmax (m)*			1.88		
M calc(KNm)*	-50.95	-36.33	21.71	-35.30	-49.79
M incr(KNm)*			26.75		
F sup (cmq)*	11.53	8.09	===	7.85	11.25
F inf (cmq)*	===	===	5.88	===	===
σc (N/mmq)*	6.97	5.68	4.71	5.58	6.91

Taglio (KN)*	68.99		68.37	
Scorrim(KN)*	===		===	
F pieg(cmq)*	===		===	
P staffe(m)*	===		===	
δ staffe(m)*	===	3.35	===	
τc (N/mmq)*	0.34		0.34	

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 14 *** <<< IMP. 2 - CAMP. 7 >>>

Luce di calcolo = 4.20 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.85 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *
 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

δx M<0 (m) *	0.89				0.67
x Mmax (m) *			2.21		
M calc(KNm) *	-64.77	-47.46	35.49	-33.82	-45.59
M incr(KNm) *			41.01		
F sup (cmq) *	14.84	10.70	===	7.50	10.26
F inf (cmq) *	===	===	9.18	===	===
σ_c (N/mm ²) *	8.10	6.71	6.11	5.45	6.51
Taglio (KN) *		82.47		75.39	
Scorrim(KN) *		===		===	
F pieg(cmq) *		===		===	
P staffe(m) *		===	===	===	
δ staffe(m) *		===	3.85	===	
τ_c (N/mm ²) *		0.41		0.37	

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 15 *** <<< IMP. 3 - CAMP. 1 >>>

Luce di calcolo = 3.25 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 2.95 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *
 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

δx M<0 (m) *	0.52				0.72
x Mmax (m) *			1.52		
M calc(KNm) *	-27.30	-18.37	20.57	-30.10	-40.23
M incr(KNm) *			23.94		
F sup (cmq) *	6.00	3.98	===	6.65	9.00
F inf (cmq) *	===	===	5.24	===	===
σ_c (N/mm ²) *	4.78	3.78	4.42	5.08	6.04
Taglio (KN) *		56.50		64.46	
Scorrim(KN) *		===		===	
F pieg(cmq) *		===		===	
P staffe(m) *		===	===	===	
δ staffe(m) *		===	2.95	===	
τ_c (N/mm ²) *		0.28		0.32	

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 16 *** <<< IMP. 3 - CAMP. 2 >>>

Luce di calcolo = 3.45 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.15 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

	* PILASTRO A SIN. *	* CAMPATA *	* PILASTRO A DES. *
	* ASSE Pil. *	* FILO Pil. *	* FILO Pil. *
	* ASSE Pil. *		* ASSE Pil. *
$\delta x M < 0$ (m) *	0.73		0.71
x Mmax (m) *		1.73	
M calc (KNm) *	-41.23	-31.03	20.38
M incr (KNm) *			-29.93
F sup (cmq) *	9.23	6.86	24.44
F inf (cmq) *	===	===	6.61
σc (N/mmq) *	6.11	5.15	5.35
		4.48	5.05
Taglio (KN) *		64.93	64.23
Scorrim (KN) *		===	===
F pieg (cmq) *		===	===
P staffe (m) *		===	===
δ staffe (m) *		3.15	===
τc (N/mmq) *		0.32	0.32

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 17 *** <<< IMP. 3 - CAMP. 3 >>>

Luce di calcolo = 3.45 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.15 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

	* PILASTRO A SIN. *	* CAMPATA *	* PILASTRO A DES. *
	* ASSE Pil. *	* FILO Pil. *	* FILO Pil. *
	* ASSE Pil. *		* ASSE Pil. *
$\delta x M < 0$ (m) *	0.74		0.70
x Mmax (m) *		1.74	
M calc (KNm) *	-41.77	-31.51	20.53
M incr (KNm) *			-29.16
F sup (cmq) *	9.36	6.97	24.58
F inf (cmq) *	===	===	6.43
σc (N/mmq) *	6.18	5.21	5.38
		4.48	4.98
Taglio (KN) *		65.33	63.83
Scorrim (KN) *		===	===
F pieg (cmq) *		===	===
P staffe (m) *		===	===
δ staffe (m) *		3.15	===
τc (N/mmq) *		0.32	0.31

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 18 *** <<< IMP. 3 - CAMP. 4 >>>

Luce di calcolo = 3.45 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.15 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

	* PILASTRO A SIN. *	* CAMPATA *	* PILASTRO A DES. *	
	* ASSE Pil. *	* FILO Pil. *	* FILO Pil. *	* ASSE Pil. *
δx M<0 (m) *	0.72			0.82
x Mmax (m) *		1.67		
M calc(KNm) *	-38.72	-28.90	18.49	-35.96
M incr(KNm) *			22.75	
F sup (cmq) *	8.64	6.37	===	8.00
F inf (cmq) *	===	===	4.97	===
σ_c (N/mmq) *	5.91	4.95	4.28	5.64
Taglio (KN) *		62.34		66.82
Scorrim(KN) *		===		===
F pieg(cmq) *		===		===
P staffe(m) *		===	===	===
δ staffe(m) *		===	3.15	===
τ_c (N/mmq) *		0.31		0.33
===Passo minimo Staffe = .18 m				Fmin.= 3.38 cmq

*** TRAVE N.ro 19 *** <<< IMP. 3 - CAMP. 5 >>>

Luce di calcolo = 4.40 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 4.10 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

	* PILASTRO A SIN. *	* CAMPATA *	* PILASTRO A DES. *	
	* ASSE Pil. *	* FILO Pil. *	* FILO Pil. *	* ASSE Pil. *
δx M<0 (m) *	0.88			0.87
x Mmax (m) *		2.20		
M calc(KNm) *	-63.85	-50.76	35.68	-50.20
M incr(KNm) *			42.04	
F sup (cmq) *	14.62	11.48	===	11.35
F inf (cmq) *	===	===	9.42	===
σ_c (N/mmq) *	8.03	6.97	6.21	6.91
Taglio (KN) *		84.19		83.92
Scorrim(KN) *		===		===
F pieg(cmq) *		===		===
P staffe(m) *		===	===	===
δ staffe(m) *		===	4.10	===
τ_c (N/mmq) *		0.42		0.41
===Passo minimo Staffe = .18 m				Fmin.= 3.38 cmq

*** TRAVE N.ro 20 *** <<< IMP. 3 - CAMP. 6 >>>

Luce di calcolo = 3.75 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.45 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *
 ----------*-----*
 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

δx M<0 (m) *	0.87			0.84
x Mmax (m) *			1.89	
M calc(KNm) *	-52.02	-40.85	21.26	-38.66
M incr(KNm) *			26.34	
F sup (cmq) *	11.79	9.14	==	8.63
F inf (cmq) *	==	==	5.78	==
σ_c (N/mm ²) *	7.11	6.11	4.68	5.91

Taglio (KN) *	71.37		70.09
Scorrim(KN) *	==		==
F pieg(cmq) *	==		==
P staffe(m) *	==		==
δ staffe(m) *	==	3.45	==
τ_c (N/mm ²) *	0.35		0.35

==Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 21 *** <<< IMP. 3 - CAMP. 7 >>>

Luce di calcolo = 4.20 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.90 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *
 ----------*-----*
 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

δx M<0 (m) *	0.88			0.70
x Mmax (m) *			2.18	
M calc(KNm) *	-63.27	-50.27	34.98	-36.02
M incr(KNm) *			40.54	
F sup (cmq) *	14.49	11.36	==	8.01
F inf (cmq) *	==	==	9.07	==
σ_c (N/mm ²) *	8.03	6.91	6.08	5.64

Taglio (KN) *	83.61		76.30
Scorrim(KN) *	==		==
F pieg(cmq) *	==		==
P staffe(m) *	==		==
δ staffe(m) *	==	3.90	==
τ_c (N/mm ²) *	0.41		0.38

==Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 22 *** <<< IMP. 4 - CAMP. 1 >>>

Luce di calcolo = 3.25 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 2.95 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

	* PILASTRO A SIN.	* CAMPATA	* PILASTRO A DES.	*
	-----	*-----*	*-----*	*
	* ASSE Pil. * FILO Pil. *		* FILO Pil. * ASSE Pil. *	*

δx M<0 (m)*	0.36			0.72
x Mmax (m)*		1.44		
M calc(KNm)*	-19.03	-10.60	23.89	-32.14 -42.77
M incr(KNm)*			26.98	
F sup (cmq)*	4.13	2.26	===	7.12 9.59
F inf (cmq)*	===	===	5.93	===
σ_c (N/mm ²)*	3.87	2.78	4.75	5.28 6.28

Taglio (KN)*		53.18		67.78
Scorrim(KN)*		===		===
F pieg(cmq)*		===		===
P staffe(m)*		===	===	===
δ staffe(m)*		===	2.95	===
τ_c (N/mm ²)*		0.26		0.33

===Passo minimo Staffe = .18 m			Fmin.= 3.38 cmq	

*** TRAVE N.ro 23 *** <<< IMP. 4 - CAMP. 2 >>>

Luce di calcolo = 3.45 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.15 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

	* PILASTRO A SIN.	* CAMPATA	* PILASTRO A DES.	*	
	-----	*-----*	*-----*	*	
	* ASSE Pil. *	* FILO Pil. *	* FILO Pil. *	* ASSE Pil. *	

$\delta x M<0$ (m)*	0.76			0.72	
x Mmax (m)*		1.74			
M calc(KNm)*	-42.76	-32.50	19.65	-29.96	-39.98
M incr(KNm)*			23.78		
F sup (cmq)*	9.59	7.20	===	6.61	8.94
F inf (cmq)*	===	===	5.20	===	===
σc (N/mm ²)*	6.28	5.31	4.42	5.05	6.01

Taglio (KN)*		65.39		63.77	
Scorrim(KN)*		===		===	
F pieg(cmq)*		===		===	
P staffe(m)*		===	===	===	
δ staffe(m)*		===	3.15	===	
τc (N/mm ²)*		0.32		0.31	

===Passo minimo Staffe = .18 m			Fmin.= 3.38 cmq		

*** TRAVE N.ro 24 *** <<< IMP. 4 - CAMP. 3 >>>

Luce di calcolo = 3.45 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.15 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

δx M<0 (m) *	0.73				0.68
x Mmax (m) *			1.74		
M calc(KNm) *	-41.60	-31.30	21.17	-28.11	-38.10
M incr(KNm) *			25.16		
F sup (cmq) *	9.32	6.92	===	6.19	8.50
F inf (cmq) *	===	===	5.51	===	===
σ_c (N/mm ²) *	6.18	5.18	4.55	4.86	5.84

Taglio (KN) *		65.59		63.57	
Scorrim(KN) *		===		===	
F pieg(cmq) *		===		===	
P staffe(m) *		===	===	===	
δ staffe(m) *		===	3.15	===	
τ_c (N/mm ²) *		0.32		0.31	

===Passo minimo Staffe = .18 m Fmin.= 3.38 cmq

*** TRAVE N.ro 25 *** <<< IMP. 4 - CAMP. 4 >>>

Luce di calcolo = 3.45 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.15 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

δx M<0 (m) *	0.72				0.91
x Mmax (m) *			1.62		
M calc(KNm) *	-37.54	-27.98	16.85	-40.42	-51.16
M incr(KNm) *			21.29		
F sup (cmq) *	8.37	6.16	===	9.04	11.58
F inf (cmq) *	===	===	4.64	===	===
σ_c (N/mm ²) *	5.78	4.85	4.13	6.04	7.01

Taglio (KN) *		60.63		68.53	
Scorrim(KN) *		===		===	
F pieg(cmq) *		===		===	
P staffe(m) *		===	===	===	
δ staffe(m) *		===	3.15	===	
τ_c (N/mm ²) *		0.30		0.34	

===Passo minimo Staffe = .18 m Fmin.= 3.38 cmq

*** TRAVE N.ro 26 *** <<< IMP. 4 - CAMP. 5 >>>

Luce di calcolo = 4.40 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 4.10 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * FILO Pil. * ASSE Pil. *

$\delta x M < 0$ (m) *	0.84			0.83
x Mmax (m) *			2.20	
M calc(KNm) *	-61.62	-48.54	37.81	-48.17
M incr(KNm) *			43.95	
F sup (cmq) *	14.09	10.96	===	10.87
F inf (cmq) *	===	===	9.87	===
σc (N/mm ²) *	7.90	6.77	6.38	6.77

Taglio (KN) *	84.15		83.96
Scorrim(KN) *	===		===
F pieg(cmq) *	===		===
P staffe(m) *	===	===	===
δ staffe(m) *	===	4.10	===
τc (N/mm ²) *	0.42		0.41

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 27 *** <<< IMP. 4 - CAMP. 6 >>>

Luce di calcolo = 3.75 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.45 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * FILO Pil. * ASSE Pil. *

$\delta x M < 0$ (m) *	0.92			0.93
x Mmax (m) *			1.86	
M calc(KNm) *	-53.36	-42.33	18.24	-43.21
M incr(KNm) *			23.63	
F sup (cmq) *	12.10	9.49	===	9.70
F inf (cmq) *	===	===	5.17	===
σc (N/mm ²) *	7.17	6.24	4.38	6.31

Taglio (KN) *	70.47		70.99
Scorrim(KN) *	===		===
F pieg(cmq) *	===		===
P staffe(m) *	===	===	===
δ staffe(m) *	===	3.45	===
τc (N/mm ²) *	0.35		0.35

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

*** TRAVE N.ro 28 *** <<< IMP. 4 - CAMP. 7 >>>

Luce di calcolo = 4.20 m Base = 100 cm Q = 41.00 KN/m
 Luce netta = 3.90 m Altezza = 25 cm
 Staffe ϕ 8 a 2 bracci Copriferro = 2.5 cm

* PILASTRO A SIN. * CAMPATA * PILASTRO A DES. *

 * ASSE Pil. * FILO Pil. * * FILO Pil. * ASSE Pil. *

δx M<0 (m) *	0.85				0.50
x Mmax (m) *			2.27		
M calc(KNm) *	-65.04	-51.51	41.12	-23.44	-34.81
M incr(KNm) *			46.11		
F sup (cmq) *	14.91	11.66	===	5.12	7.73
F inf (cmq) *	===	===	10.38	===	===
σc (N/mm ²) *	8.17	7.04	6.57	4.37	5.51
Taglio (KN) *		87.15		72.76	
Scorrim(KN) *		===		===	
F pieg(cmq) *		===		===	
P staffe(m) *		===	===	===	
δ staffe(m) *		===	3.90	===	
τc (N/mm ²) *		0.43		0.36	

===Passo minimo Staffe = .18 m

Fmin.= 3.38 cmq

ARMATURA PILASTRI

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*-----*
*   <<<DATI DI PROGETTO>>>   *
*-----*

*-----*
*   CLS Rbk =    25    N/mm2 *
*-----*
*   Coeff. n =    15    *
*-----*
*    $\sigma_c$  amm =    8.50 N/mm2 *
*-----*
*    $\sigma_c$  med.amm =    5.95 N/mm2 *
*-----*
*    $\sigma_f$  amm =    220    N/mm2 *
*-----*
*    $\tau_{c0}$  =    0.53 N/mm2 *
*-----*

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* P *	Base	Alt.	* N *	* M *	* F=F' *	* σ_c max *	* σ_f max *	* Nmax/Aci *	* Ftot
* I *									
* L *	(cm)	(cm)	(KN)	(KNm)	(cmq)	(N/mm ²)	(N/mm ²)	(N/mm ²)	(%A)
1	50	30	531.73	5.92	3.57	-4.00	===	-3.31	0.48
9	40	30	396.91	13.49	2.67	-5.08	===	-3.10	0.44
17	40	30	263.97	12.44	1.80	-4.00	===	-2.11	0.30
25	40	30	130.32	15.53	1.80	-4.36	54.98	-1.04	0.30
2	30	50	606.07	0.65	4.07	-3.78	===	-3.74	0.54
10	30	40	452.03	0.23	3.04	-3.53	===	-3.50	0.51
18	30	30	300.64	0.33	2.02	-3.19	===	-3.13	0.45
26	30	30	152.21	0.59	1.35	-1.74	===	-1.62	0.30
3	30	50	600.62	1.01	4.04	-3.77	===	-3.70	0.54
11	30	40	447.67	0.84	3.01	-3.56	===	-3.47	0.50
19	30	30	297.01	0.48	2.00	-3.19	===	-3.09	0.44
27	30	30	148.41	1.33	1.35	-1.85	===	-1.58	0.30
4	50	30	735.85	-0.05	4.95	-4.47	===	-4.46	0.66
12	40	30	549.34	-0.52	3.69	-4.26	===	-4.19	0.62
20	40	30	364.70	-0.32	2.45	-2.91	===	-2.86	0.41
28	30	30	180.24	-0.10	1.35	-1.94	===	-1.92	0.30
5	40	30	835.55	3.21	6.81	-6.34	===	-5.95	1.13
13	40	30	626.97	8.88	4.21	-5.94	===	-4.73	0.70
21	40	30	418.01	8.51	2.81	-4.49	===	-3.25	0.47
29	30	30	208.71	8.83	1.40	-4.00	===	-2.22	0.31
6	30	50	703.94	-3.54	4.73	-4.52	===	-4.29	0.63
14	30	40	524.39	-7.50	3.53	-4.80	===	-4.02	0.59
22	30	30	347.80	-4.54	2.34	-4.45	===	-3.59	0.52

* P *	Base *	Alt. *	N *	M *	F=F' *	σ_c max *	σ_f max *	Nmax/Aci *	Ftot *
I *									
L *	(cm)	(cm)	(KN)	(KNm)	(cmq)	(N/mm ²)	(N/mm ²)	(N/mm ²)	(%A)
30	30	30	173.48	-6.27	1.35	-3.12	===	-1.84	0.30
7	30	50	705.41	5.24	4.74	-4.64	===	-4.30	0.63
15	30	40	526.15	8.61	3.54	-4.92	===	-4.03	0.59
23	30	30	349.92	5.07	2.35	-4.57	===	-3.61	0.52
31	30	30	177.18	8.41	1.35	-3.59	===	-1.88	0.30
8	50	30	609.89	-9.90	4.10	-4.89	===	-3.76	0.55
16	40	30	455.88	-23.88	3.06	-6.96	===	-3.53	0.51
24	40	30	303.35	-22.02	2.04	-5.72	36.88	-2.41	0.34
32	40	30	140.90	-34.81	3.76	-8.50	202.80	-1.14	0.63