



## **RAPORT DE EXPERTIZA TEHNICA PRIVITOR LA NIVELUL DE ASIGURARE LA SOLICITARI SEISMICE A CONSTRUCTIEI DIN BUCURESTI, STR.ORHIDEELOR NR.6, SECTOR 6**

### **1.OBIECTUL EXPERTIZEI TEHNICE**

Prezenta expertiza tehnica s-a intocmit ca urmare a solicitarii beneficiarului in vederea reabilitarii constructiei existente de la adresa de mai sus.

In conformitate cu exigentele prescrise de normativul P.100/92 la expertizarea cladirilor existente sub aspectul nivelului de asigurare a protectiei antiseismice, expertiza tehnica are ca obiect:

1.1.Identificarea alcatuirii structurii de rezistenta a cladirii.

1.2.Stabilirea gradului de asigurare a protectiei antiseismice a constructiei si a gradului de risc seismic, in conditiile prevederilor cap.11 din normativul P.100/92, completate si modificate prin Ordin MPLAT nr.71/N din 7.10.1996. Avand in vedere ca la data de 01.01.2007 a intrat in vigoare normativul P100-1/2006, se vor efectua verificarile prin calcul in conformitate cu noul normativ, dar cu norma de continut conform capitolului 11 din P100/92.

1.3.Propuneri privind masurile de interventie necesare pentru marirea acestui grad de asigurare, in cazul cind se situeaza sub cel minim admis de normativ.





## **2.DATE DE CARE S-A DISPUS PENTRU EFECTUAREA EXPERTIZEI.**

2.1.Pentru intocmirea expertizei s-a dispus de urmatoarele:

- Releveele constructiei existente.
- Observatii facute la fata locului asupra constructiei existente.

## **3.CONSTATARI REFERITOARE LA ALCATUIREA CONSTRUCTIEI EXISTENTE**

3.1.Alcatuirea generala a constructiei existente.

Constructia ce face obiectul expertizei tehnice a fost executata in anii '60. Constructia este cu demisol, parter si un etaj. Inaltimea de nivel a parterului si a etajului este de 3,20m si variabila la pod. In plan, constructia are forma neregulata ce se inscrie intr-un dreptunghi cu laturile de 30,95 si 16,95m. Invelitoarea este de tabla.

Constructia existenta este pe ziduri portante de caramida ceramica neintarite cu un sistem coerent de centuri si stalpisor de beton armat care sa-i confere o minima ductilitate.

Plansele de peste demisol, de peste parter si de peste etaj sunt de beton armat.

Grosimile zidurilor structurale exterioare sunt de 37,5cm iar a celor interioare de 25cm. Constructia are fundatii de beton simplu sub peretii subsolului.

Peretii subsolului sunt din zidarie de caramida ceramica de 50cm pe contur si de 25cm la interior. Deasupra golurilor de use si ferestre buiandrugii sunt executati din beton armat.

3.2.Finisaje, instalatii.

Constructia are finisaje obisnuite pentru functiunea de utilitate publica (birouri). Constructia a fost recent reafinisata si in consecinta eventualele fisuri sau crapaturi ce au aparut in timp nu pot fi relevate.





Constructia dispune de instalatii electrice, sanitare si de incalzire.

#### **4.INCADRAREA CONSTRUCTIEI IN CATEGORIILE PREVAZUTE IN CAP.11 DIN NORMATIVUL P.100-92, IN VEDEREA STABILIRII PROCEDEELOR DE INVESTIGARE IN CADRUL EXPERTIZEI.**

In conformitate cu clasificarile din normativul P.100-92, cap.11, cladirea se incadreaza in categoria "a" - constructie cu sistemul structural din zidarie de caramida.

In conformitate cu clasificarile din normativul P100-1/2006, cap.5.3., constructia este caracterizata din punct de vedere seismic astfel:

- clasa de importanta III;

- Valoarea de varf a acceleratiei terenului pentru cutremurul avand IMR=100ani = 0,24g;

- Perioada de control (colt) a spectrului de raspuns  $T_c=1,6$  secunde.

In urma reabilitarii, constructia nu isi schimba clasa de importanta.

Procedeele de investigare minimale prescrise si aplicate in cele ce urmeaza sunt:

- E1 - evaluare calitativa.

- E2a - verificare prin metode de calcul curente pentru evaluarea capacitatii de rezistenta.

#### **5.CONSTATARI DIN EXAMINAREA CALITATIVA - PROCEDUREL E1**

5.1.Asa cum s-a aratat mai sus la punctul 3.2, constructia a fost realizata fara a avea la baza o concepie de conformare si dimensionare antiseismica moderna. In consecinta, constructia privita in lumina cunostintelor si exigentelor actuale, prezinta deficiente sub aspectul lipsei unui sistem coerent de ductilizare a peretilor de zidarie de caramida (centuri, stalpisor de beton armat). Constructia are plansee de beton armat care sunt capabile sa constituie



o saiba rigida care confera structurii o comportare spatiala favorabila la cutremure.

Materialele din care este alcatuita zidaria au caracteristici mecanice reduse, caracteristice perioadei cand a fost executata constructia. Mortarul este de var apreciat acoperitor cu marca M10, iar caramizile cu marca C50.

5.2.Din declaratiile beneficiarului rezulta ca constructia s-a comportat satisfactor la cutremurele anterioare, fara a suferi avarii sau fisuri.

S-au relevat fisuri cu deschiderea sub 1mm la colturile ferestrelor de la parter si fisuri inclinate mai importante, de aproximativ 3mm, in peretii de la etajul 1.

## **6.VERIFICAREA PRIN CALCUL, FOLOSIND PROCEDEE SIMPLIFICATE - PROCEDEUL E2A. IPOTEZE ADMISE LA BAZA CALCULULUI SI METODA DE CALCUL UTILIZATA.**

6.1.In lipsa unor date certe privind calitatea materialelor ce alcatuiesc peretii de zidarie ai constructiei, s-a considerat acoperitor ca mortarul are marca M10, iar caramizile au marca C50.

6.2.Deoarece constructia are plansee capabile sa formeze o saiba rigida verificarea prin calcul s-a facut pe ansamblul constructiei pe doua directii ortogonale (transversal si longitudinal). Lipsa unor elemente de ductilizare a peretilor de zidarie nu a permis sa se poata conta pe o anumita ductilitate in comportarea de ansamblu a structurii, si in consecinta la determinarea fortelor orizontale seismice "de cod" valoarea coeficientului  $q$  s-a plafonat inferior la valoarea de 1,25. Determinarea coeficientului  $q$  s-a facut in functie de modul de cedare a spaletilor de zidarie.

6.3.Schema de calcul a structurii s-a stabilit considerind spaletii de zidarie portanta ca incastrati la nivelul cotei +/-0,00.







6.4. Calculul solicitarilor si verificarea sectiunilor la compresiune excentrica si la forta taietoare s-a facut cu ajutorul unui program de calcul automat.

In anexa la prezentul raport de expertiza sunt date in cadrul notelor de calcul listingurile cu rezultatele calculelor la nivelul parterului si metodologia de calcul folosita.

## **7. VERIFICAREA PRIN CALCUL - PROCEDEUL E2a. REZULTATELE CALCULULUI.**

7.1. Pe baza ipotezelor de mai sus s-a efectuat calculul de verificare pentru constructia in forma ei actuala, care a condus la urmatoarele rezultate pentru valorile coeficientului  $q$  care intra in componenta fortei seismice de cod si care sunt determinante pentru rezultatele finale - si pentru valorile gradului de asigurare "R" definit in normativul P100-92:

Directia de actiune a fortelor seismice orizontale	Nivelul	$q$	R
Transversal	parter	1,324	0,274
Longitudinal	parter	2,037	0,526

7.2. Din valorile R date in tabelul de mai sus rezulta ca acestea se situeaza pe directie transversala sub limita  $R_{\min}=0,5$  si in consecinta conform prevederilor normativului P.100-92 **sunt** necesare interventii structurale pentru marirea nivelului de asigurare a protectiei antiseismice pentru constructiile din clasa III de importanta.

**In concluzie valoarea gradului nominal de asigurare la actiuni seismice - "R" este 0,274.**





## **8.INCADRAREA CONSTRUCTIEI IN CLASA DE RISC SEISMIC.**

8.1.In urma analizarii structurii in cap.5 si 7, prin metodele E1-examinare calitativa si E2a-verificare prin calcul si in conformitate cu criteriile prevazute in capitolul 11.6 din normativ, **se apreciaza ca constructia se incadreaza din punct de vedere al riscului seismic in clasa R<sub>slI</sub>, corespunzind constructiilor la care probabilitatea de prabusire este redusa dar la care sunt asteptate degradari structurale majore la incidenta cutremurului de proiectare.**

## **9.CONCLUZII SI PROPUNERI DE MASURI DE INTERVENTIE (CONSOLIDARI SI REMODELARI STRUCTURALE).**

9.1.Conform prevederilor normativului criteriul cantitativ pentru stabilirea deciziei de interventie este valoarea "R" a gradului de asigurare la actiuni seismice. Conform tabelului 12.1. pentru constructiile de clasa III de importanta valoarea minima recomandata pentru gradul minimal de asigurare la actiuni seismice R<sub>min</sub> al constructiilor existente este 0,5.

9.2.Asa cum rezulta din examinarea calitativa (cap.5 din prezentul raport) si din concluziile verificarilor prin calcul (cap.7 din prezentul raport), cladirea din strada Orhideelor nr.6, a avut o comportare generala buna la actiunea cutremurelor puternice din 1977, 1986 si 1990. Deficientele principale ale constructiei sunt lipsa unor elemente coerente de ductilizare a peretilor de caramida ceramica si rezistentele mecanice reduse ale materialor care alcatuiesc peretii. Desi nu a fost proiectata avand la baza o conceptie si o dimensionare a structurii de rezistenta pentru a rezista la cutremure, alcatuirea generala si dimensiunile elementelor structurale au fost de natura a face fata la mai multe cutremure de grad 7 si 8, practic fara avarii.

Avand in vedere clasa de risc seismic a constructiei, starea de conservare, valorile gradului de asigurare la actiuni seismice rezultate din







calcul, clasa de importanta a constructiei, se propune in cele ce urmeaza solutia de consolidare considerata optima.

### **9.3.PROPUNEREA DE INTERVENTIE MINIMALA:**

Avand in vedere rezultatele verificarilor prin calcul si a analizei calitative in ceea ce priveste structura existenta constructia necesita consolidari ce constau in :

- Injectarea crapaturilor din zidarie care se vor releva la executie cu mortar de ciment expansiv.

- Consolidarea structurala care consta in camasuirea pe ambele fete a peretilor care prezinta continuitate pe verticala, inclusiv in subsol, cu mortar de ciment M100 de 5cm grosime armat cu plase de otel PC52 Ø6/10cm. Pentru aceasta peretele se va curata de tencuiala existenta cu adancirea rosturilor dintre caramizile zidariei (1,5÷2cm).

Valoarea gradului de asigurare "R" definit in normativul P100-92 dupa consolidare si realizarea interventiilor  $R = \min.0,7$ .

INTOCMITOR

ing.S.Paunescu  
expert tehnic in constructii  
atestat conf.H.G.731/14.10.1991  
certificat Nr.182/15.09.1992)

ANEXE

BREVIAR DE CALCUL  
RELEVU PARTER





## BREVIAR DE CALCUL

### \*REGIM DE INALTIME – PARTER SI POD DE LEMN

hparter = 3,20m

hetaj = 3,20m

hpod = variabil

### \*ELEMENTE DE SUPRASTRUCTURA

\*STRUCTURA DE REZISTENTA ESTE REALIZATA DIN PERETI DE ZIDARIE DE CARAMIDA, AVIND GROSIMI DE 25, 37,5 si 50cm.

\*PLANSEEELE SUNT DE BETON ARMAT

\*INVELITOAREA ESTE DE TABLA

### \*CARACTERISTICILE MATERIALELOR

-CARAMIZI C50

-MORTAR M10

## II.INCARCARI

### \*INCARCARI ELEMENTE (SARCINI NORMATE)

1.PLANSEE = 500 daN/mp

2.INVELITOARE PE ASTEREALA SI CAPRIORI = 160 daN/mp

### 3.ZIDARIE DE CARAMIDA :

12,5cm GROSIME (½C) = 305 daN/mp

25cm GROSIME (1C) = 530 daN/mp

37,5cm GROSIME (1½C) = 755 daN/mp

50cm GROSIME (2C) = 980 daN/mp





**LUCRAREA: EXPERTIZA TEHNICA REFERITOARE LA NIVELUL DE  
ASIGURARE LA SOLICITARI SEISMICE A CONSTRUCTIEI DIN BUCURESTI,  
STR. ORHIDEELOR NR.6, SECTOR 8****EXPERT TEHNIC IN CONSTRUCTII ATESTAT  
CONDI. H.G. 731/14.10.1991 (CERTIFICAT  
NR.182/15.09.1992) Ing. Serban Paunescu****VERIFICAREA STRUCTURILOR CU PERETI PORTANTI DIN ZIDARIE  
PROGRAM ZID2006****LUCRAREA : VERIFICARE SPALETI TRANSVERSAL.**

CALCULUL S-A EFECTUAT SEPARAT PENTRU FIECARE SENS DE ACTIUNE A FORTEI ORIZONTALE

**DATE DE INTRARE SI REZULTATE**

UNITATI DE MASURA : cm si daN

VALOAREA DE VÂRF A ACCELERATIIEI TERENULUI PENTRU CUTREMURE AVANT INTERVELOUL DE

RECURENTIA 1/5 - 100 ANI ..... : 0.24g

CLASA DE IMPORTANTA A CONSTRUCTIEI..... : III

COEFICIENTUL DE IMPORTANTA ( $\gamma_1$ )..... : 0.9PERIODA DE COLT  $T_0$  ..... : 1.6

NUMAR DE SPALETI..... : 16

INALTIMEA SPALETILOR ..... : 640

INALTIMEA PATA DE BAZA UNEI SE FACE VERIFICAREA..... : 0

INALTIMEA TOTALA A SPALETILOR ..... : 640

DATE DESPRE MATERIALELE DIN CARE ESTE ALCATUITA ZIDARIA

MARCA MORTARULUI ..... : M10

MARCA CARAMIZILOR ..... : C50

VALORILE REZISTENTEIOR MEDII ALE ZIDARIEI (daN/cm<sup>2</sup>) :

Rezistenta la compresune axiale luata in calcul..... : 14

Valorile rezistenteilor la "includere luata in calcul" :

R<sub>lc</sub>..... : 165R<sub>lm</sub>..... : 10R<sub>lt</sub>..... : 9R<sub>l</sub>..... : 1.7

S	NR.	E	H	H	X	XG	Atot.	Iy
P	TOT.	L	cm	cm	cm	cm	cm <sup>2</sup>	cm <sup>4</sup>
A	ALEX.	E						
1		M						
E		E						
1		N						
		V						
-----DATE DE INTRARE-----								
1	2	1	.3750E+02	.8000E+02	.1975E+02			
		2	.8000E+02	.3750E+02	.7750E+02	.4813E+02	.6030E+02	.712691E+07
2	2	1	.4600E+02	.2500E+02	.2300E+03			
		2	.3750E+02	.1750E+03	.4788E+03	.3204E+03	.1806E+03	.462085E+09
3	2	1	.4100E+03	.3750E+02	.2200E+03			
		2	.3750E+02	.2000E+03	.4568E+03	.2946E+03	.2400E+03	.560993E+09
4	1	1	.2600E+03	.2500E+02	.1300E+03			
		1	.2600E+03	.2500E+02	.1300E+03	.1300E+03	.6500E+04	.366167E+08
5	2	1	.7000E+02	.3750E+02	.3500E+02			
		2	.3750E+02	.7000E+02	.8675E+02	.6188E+02	.5250E+04	.517139E+07
6	2	1	.3750E+02	.1000E+03	.1675E+02			
		2	.1350E+03	.3750E+02	.1050E+03	.6930E+02	.8813E+04	.241538E+08
7	3	1	.3750E+02	.1600E+03	.1875E+02			
		2	.4400E+03	.2500E+02	.2575E+03			
		3	.2500E+02	.1750E+03	.4900E+03	.2306E+03	.2213E+05	.783775E+09
8	3	1	.3750E+02	.1800E+03	.1875E+02			
		2	.4400E+03	.2500E+02	.2575E+03			
		3	.2500E+02	.1750E+03	.4900E+03	.2306E+03	.2213E+05	.783775E+09
9	3	1	.2500E+02	.1750E+03	.1250E+02			
		2	.3900E+03	.2500E+02	.2200E+03			
		3	.3750E+02	.1500E+03	.4338E+03	.2349E+03	.1975E+05	.565448E+09



**LUCRAREA: EXPERTIZA TEHNICA REFERITOARE LA NIVELUL DE ASIGURARE LA SOLICITARI SEISMICE A CONSTRUCTIEI DIN BUCURESTI, STR.ORHIDEELOR NR.8, SECTOR 8**

**EXPERT TEHNIC IN CONSTRUCTII A LSTAT CONF.H.G.751/4.10.1991 (CERTIFICAT NR.182/15.09.1992) ing.Serban Paunescu**

10	3	1	.12500E+02	.1750E+03	.1250E+02						
		2	.3900E+03	.2500E+02	.2200E+03						
		3	.3750E+02	.1500E+03	.4338E+03	.2349E+03	.1975E+05	.565448E+09			
11	3	1	.12500E+02	.1750E+03	.1250E+02						
		2	.3900E+03	.2500E+02	.2200E+03						
		3	.3750E+02	.1500E+03	.4338E+03	.2349E+03	.1975E+05	.565448E+09			
12	3	1	.12500E+02	.1750E+03	.1250E+02						
		2	.3900E+03	.2500E+02	.2200E+03						
		3	.3750E+02	.1500E+03	.4338E+03	.2349E+03	.1975E+05	.565448E+09			
13	3	1	.12500E+02	.1750E+03	.1250E+02						
		2	.3900E+03	.2500E+02	.2200E+03						
		3	.3750E+02	.1500E+03	.4338E+03	.2349E+03	.1975E+05	.565448E+09			
14	3	1	.12500E+02	.1750E+03	.1250E+02						
		2	.3900E+03	.2500E+02	.2200E+03						
		3	.3750E+02	.1500E+03	.4338E+03	.2349E+03	.1975E+05	.565448E+09			
15	2	1	.3000E+02	.3750E+02	.4500E+02						
		2	.3750E+02	.3000E+02	.1088E+03	.7683E+02	.6750E+04	.953174E+07			
16	1	1	.1300E+03	.3750E+02	.6500E+02						
		1	.1300E+03	.3750E+02	.6500E+02	.6500E+02	.4875E+04	.686563E+07			

**SPALET ARIA INIMII/MODULELE DE REZISTENTA/LIMITELE SIMBURELUI CENTRAL**

	(cm2)	W1 (cm3)	W2	r1 (cm)	r2
1	.4406E+04	.178133E+06	.102759E+06	17.13	24.69
2	.1244E+05	.144232E+07	.260883E+07	144.43	79.85
3	.1791E+05	.190419E+07	.306737E+07	127.81	79.34
4	.6500E+04	.281867E+06	.281667E+06	43.33	43.33
5	.4031E+04	.335790E+06	.113345E+06	21.59	13.92
6	.6669E+04	.353853E+06	.231793E+06	26.30	40.13
7	.1256E+05	.339032E+07	.280290E+07	130.30	130.60
8	.1256E+05	.339832E+07	.288296E+07	130.30	153.60
9	.1131E+05	.240705E+07	.259672E+07	131.58	121.88
10	.1131E+05	.240705E+07	.259872E+07	131.58	121.88
11	.1131E+05	.240705E+07	.259672E+07	131.58	121.88
12	.1131E+05	.240705E+07	.259872E+07	131.58	121.88
13	.1281E+05	.324311E+07	.315453E+07	155.30	110.43
14	.1431E+05	.347757E+07	.400521E+07	169.09	146.81
15	.4781E+04	.123890E+06	.188281E+06	27.89	13.37
16	.4875E+04	.105625E+06	.105625E+06	21.67	21.67

Perete pîn (spalet în consola): rigiditatea riglelor de cuplare  
s-a neglijat

VALORILE FORTELOR AXIALE ÎN FIECARE PERETE (SPALET).... N

VALORILE EFORTURILOR UNITARE PEDETE DE COMPRESIUNE...sigma0

Valorile capacitatii corespunzatoare efortului unitar

Spalet	N (daN)	sigma0 (J)	tau0c cap.	tau0u cap.
1	.900000E+04	.150000E+01	1.00	0.50
2	.770000E+05	.426258E+01	1.30	1.00
3	.520000E+05	.216667E+01	1.00	0.50
4	.430000E+05	.692303E+01	1.70	1.00
5	.250000E+05	.476190E+01	1.50	1.30
6	.216000E+05	.245106E+01	1.00	0.50
7	.104000E+06	.470056E+01	1.50	1.30
8	.104000E+06	.470056E+01	1.50	1.30
9	.880000E+05	.445570E+01	1.30	1.00
10	.880000E+05	.445570E+01	1.30	1.00
11	.880000E+05	.445570E+01	1.30	1.00
12	.880000E+05	.445570E+01	1.30	1.00





**LUCRAREA: EXPERTIZA TEHNICA REFERITOARE LA NIVELUL DE ASIGURARE LA SOLICITARI SEISMICE A CONSTRUCTIEI DIN BUCURESTI, STR.ORHIDEELOR NR.6, SECTOR 6**

**EXPERT TEHNIC IN CONSTRUCTII AILSTATI CONF.H.G.731/14.10.1991 (CERTIFICAT NR 182/15.09.1992) ing.Serban Paunescu**

13	.104000E-06	.512000E+01	1.50	1.30
14	.100000E-06	.422164E+01	1.30	1.00
15	.900000E-04	.133535E+01	0.80	0.20
16	.136000E-05	.320000E+01	1.20	0.80

GREUTATEA APRENTA GRUPULUI DE SPALTELI C= 1490000 daN

Valorile momentelor de fisurare (daN/cm) (Mf-N\*r) in functie de directia de actiune a fortei seismice :

-Prima directie de actiune a fortei seismice - Mf1

A doua directie de actiune a fortei seismice - Mf2

ARIILE ZONELOR COMPRESATE IN STADIUL DE RUPESE LA INCOVOIERE

Ac1=Ac2=(sigma/Kc)\*Aria totala - pentru sectiunile din zidarie simpla

Spalati	Mf1	Mf2	Ac1	Ac2
1	.154139E+06	.222200E+06	.642857E+03	.642857E+03
2	.111214E+08	.614657E+07	.550000E+04	.550000E+04
3	.684597E+07	.412575E+07	.371429E+04	.371429E+04
4	.195000E+07	.195000E+07	.321429E+04	.321429E+04
5	.539740E+06	.397990E+06	.178571E+04	.178571E+04
6	.568150E+06	.866827E+06	.154286E+04	.154286E+04
7	.135515E+08	.159740E+08	.742857E+04	.742857E+04
8	.135515E+08	.159740E+08	.742857E+04	.742857E+04
9	.115791E+08	.107251E+08	.628571E+04	.628571E+04
10	.115791E+08	.107251E+08	.628571E+04	.628571E+04
11	.115791E+08	.107251E+08	.628571E+04	.628571E+04
12	.115791E+08	.107251E+08	.628571E+04	.628571E+04
13	.161512E+08	.114847E+08	.742857E+04	.742857E+04
14	.169085E+08	.146810E+08	.714286E+04	.714286E+04
15	.251042E+06	.165320E+06	.642857E+03	.642857E+03
16	.338000E+06	.338000E+06	.111429E+04	.111429E+04

INALTIMILE ZONELOR COMPRESATE (x1 si x2)

DISTANTELE c1 si c2 DE LA CENTRELE DE GREUTATE ALE ZONELOR COMPRESATE AC1 SI AC2 PINA LA PIERRELE EXTREME COMPRESATE RESPECTIVE

spalati	x1	x2	c1	c2
1	.603571E+01	.171429E+02	.401786E+01	.657143E+01
2	.220000E+03	.314286E+02	.110000E+03	.157143E+02
3	.990776E+02	.195714E+02	.495238E+02	.928571E+01
4	.128571E+03	.128571E+03	.642857E+02	.642857E+02
5	.476190E+02	.255102E+02	.238095E+02	.127551E+02
6	.154286E+02	.411429E+02	.771429E+01	.205714E+02
7	.646429E+02	.147143E+03	.317024E+02	.427421E+02
8	.646429E+02	.147143E+03	.317024E+02	.427421E+02
9	.101429E+03	.639286E+02	.279160E+02	.221099E+02
10	.101429E+03	.639286E+02	.279160E+02	.221099E+02
11	.101429E+03	.639286E+02	.279160E+02	.221099E+02
12	.101429E+03	.639286E+02	.279160E+02	.221099E+02
13	.222143E+03	.727429E+02	.861916E+02	.229554E+02
14	.135714E+03	.607143E+02	.387946E+02	.212165E+02
15	.171429E+02	.714286E+01	.857143E+01	.357143E+01
16	.297143E+02	.297143E+02	.148571E+02	.148571E+02

VALORI LE FORTELOR TAIE TOARE ASOCIATE MOMENTELOR DE FISURARE  
PENTRU AMBELE SENSURI DE ACTIUNE ALE FORTELOR SEISMICE ORIZONTALE  
Qf=1,5\*Mf/H



**LUCRAREA: EXPERTIZA TEHNICA REFERITOARE LA NIVELUL DE  
ASIGURARE LA SOLICITARI SEISMICE A CONSTRUCTIEI DIN BUCURESTI,  
STR.ORHIDEELOR NR.6, SECTOR 6**

**EXPERTIZA TEHNICA IN CONSTRUCTII ALE STAT  
CONF.H.G.73\*/14.10.1991 (CERTIFICAT  
NR.182/15.09.1992) ing.Serban Paunescu**

VALORILE MOMENTELOR INCOVOIETOARE ULTIME

$Mu1=N*(y1-c1)$   $Mu2=N*(y2-c2)$

VALORILE FORTELOR TAIEITOARE ASOCIATE MOMENTELOR INCOVOIETOARE ULTIME  
PENTRU AMBELE SENSURI DE ACTIUNE ALE FORTELOR SEISMICE ORIZONTALE

$Q_{L1}=1,5*ML/H$

apalel	Q11	Q12	Mu1	Mu2	Qu1	Qu2
1	.3613E+03	.5208E+03	.3973E+06	.3472E+06	.9304E+03	.1283E+04
2	.2607E+05	.1441E+05	.1620E+08	.1243E+08	.3797E+05	.2913E+05
3	.1558E+05	.9670E+04	.1274E+08	.9027E+07	.2967E+05	.2116E+05
4	.4570E+04	.4570E+04	.2957E+07	.2857E+07	.6937E+04	.6937E+04
5	.1255E+04	.9320E+03	.9516E+06	.8217E+06	.2230E+04	.1926E+04
6	.1332E+04	.2002E+04	.1309E+07	.1806E+07	.3067E+04	.4234E+04
7	.3176E+05	.3744E+05	.2173E+08	.2383E+08	.5093E+05	.5585E+05
8	.3176E+05	.3744E+05	.2173E+08	.2383E+08	.5093E+05	.5585E+05
9	.2714E+05	.2514E+05	.1822E+08	.1720E+08	.4269E+05	.4032E+05
10	.2714E+05	.2514E+05	.1822E+08	.1720E+08	.4269E+05	.4032E+05
11	.2714E+05	.2514E+05	.1822E+08	.1720E+08	.4269E+05	.4032E+05
12	.2714E+05	.2514E+05	.1822E+08	.1720E+08	.4269E+05	.4032E+05
13	.3788E+05	.2692E+05	.2279E+08	.1976E+08	.5200E+05	.4632E+05
14	.3963E+05	.3471E+05	.2676E+08	.2448E+08	.6273E+05	.5739E+05
15	.5884E+03	.3075E+03	.6147E+06	.4235E+06	.1441E+04	.9925E+03
16	.7822E+03	.7822E+03	.7822E+06	.7822E+06	.1833E+04	.1833E+04

VALORILE FORTELOR TAIEITOARE ASOCIATE RUPERII DUPA SECTIUNI INCLINATE

$Q_{fcap}=q_{fcap}*(Aria\ inimii)$

FORTELE TAIEITOARE ASOCIATE RUPERII IN SECTIUNI INCLINATE,  
IN ZONA COMPRESATA, IN STADIUL DE CEDARE

$Q_c=Q_{scap}*(Aria\ inimii)$

VALORILE FORTELOR ORIZONTALE CAPABILE LA LUNECARE IN ROSIURILE ZIDARIEI

$Q_L=minf*N - a-a\ considerat\ in\ calcul\ min=0,7$

VALORILE FORTELOR TAIEITOARE CAPABILE IN STADIUL ULTIM

$Q_{cap}=min(Q_c, Q_{ui}, Q_L)$

apalel	Qfcap	Qc	Ql	Qcap1	Qcap2
1	.440625E+04	.220313E+04	.630000E+04	.930385E+03	.128758E+04
2	.161687E+05	.124375E+05	.538000E+05	.161687E+05	.161687E+05
3	.179063E+05	.995313E+04	.364000E+05	.179063E+05	.179063E+05
4	.110500E+05	.117000E+05	.315000E+05	.693050E+04	.693080E+04
5	.604698E+04	.524063E+04	.175000E+05	.223040E+04	.192597E+04
6	.846875E+04	.323438E+04	.151200E+05	.306704E+04	.423360E+04
7	.188438E+05	.163312E+05	.728000E+05	.188438E+05	.188438E+05
8	.188438E+05	.163312E+05	.728000E+05	.188438E+05	.188438E+05
9	.147062E+05	.113125E+05	.616000E+05	.147062E+05	.147062E+05
10	.147062E+05	.113125E+05	.616000E+05	.147062E+05	.147062E+05
11	.147062E+05	.113125E+05	.616000E+05	.147062E+05	.147062E+05
12	.147062E+05	.113125E+05	.616000E+05	.147062E+05	.147062E+05
13	.192138E+05	.166563E+05	.728000E+05	.192138E+05	.192188E+05
14	.186063E+05	.143125E+05	.702000E+05	.186063E+05	.186063E+05
15	.382500E+04	.356250E+03	.630000E+04	.144078E+04	.992536E+03
16	.585000E+04	.390000E+04	.109200E+05	.183335E+04	.183335E+04





LUCRAREA: EXPERTIZA TEHNICA REFERITOARE LA NIVELUL DE  
ASIGURARE LA SOLICITARI SEISMICE A CONSTRUCTIEI DIN BUCURESTI,  
STR. ORHIDEELOR NR.6, SECTOR 6

EXPERT TEHNIC IN CONSTRUCTII ATESTAT  
CONF. H.C. 731/14.10.1991 (CERTIFICAT  
NR.182/16.09.1992) Ing. Serban Paunescu

**FORTA TAIETOARE SEISMICA DE BAZA CAPABILA PENTRU AMBELE  
SENSURI DE ACTIUNE A FORTELOR SEISMICE**

Pentru primul sens	Scap. =	.184845E+06
Pentru al doilea sens	Scap. =	.185612E+06

**VALOREA COEFICIENTULUI q MEDIU PE ANSAMBLUL STRUCTURII  
CONSIDERATE IN CALCUL**

**CALCULUL S-A EFECTUAT PENTRU AMBELE SENSURI DE ACTIUNE  
A FORTELOR SEISMICE ORIZONTALE**

Primul sens - q mediu = .132354E+01  
Al doilea sens - q mediu = .139065E+01

**FORTA TAIETOARE SEISMICA DE BAZA CONVENTIONALA DETERMINATA  
CONFORM PREVEDERILOR NORMATIVULUI P100/1-2006  
SI COEFICIENTUL SEISMIC GLOBAL**

Pentru primul sens	Scod = .6755E+06	Coef. cod. = .453
Pentru al doilea sens	Scod = .6429E+06	Coef. cod. = .431

**GRADUL DE ASIGURARE AL STRUCTURII**

Pentru primul sens R = 0.274  
Pentru al doilea sens R = 0.289

**REZULTAT FINAL R = 0.274**



**LUCRAREA: EXPERTIZA TEHNICA REFERITOARE LA NIVELUL DE  
ASIGURARE LA SOLICITARI SEISMICE A CONSTRUCTIEI DIN BUCURESTI,  
STR.ORDHEELOR NR.6, SECTOR 6**

**EXPERTIZILINIC IN CONSTRUCTII ATESTAT  
CONF.H.G.731/14.10.1991 (CERTIFICAT  
NR.182/15.09.1992) ing.Serban Paunescu**

## VERIFICAREA STRUCTURILOR CU PERETI PORTANTI DIN ZIDARIE PROGRAM ZID2006

**LUCRAREA : VERIFICARE SPALETI LONGITUDINAL.**

CALCULUL S-A EFECTUAT SEPARAT PENTRU FIECARE SENS DE ACTIUNE A FORTELOR ORIZONTALE

### DATE DE INTRARE SI REZULTATE

UNITATI DE MASURA : cm si daN

VALOAREA DE VARF A ACCELERATIEI PORENCLUI PENTRU CUREMURE AVAND INTERVIU DE  
RECURENTA IMR = 100 ANI ..... : 0.24g

CLASA DE IMPORTANTA A CONSTRUCTIEI..... : II

COEFICIENTUL DE IMPORTANTA ( $\gamma_I$ )..... : 0.8

PERIODA DE COLT  $T_c$  ..... : 1.6

NUMAR DE SPALETI..... : 31

INALTIMEA SPALETILOR ..... : 640

INALTIMEA FATA DE BAZA UNDE SE FACE VERIFICAREA..... : 0

INALTIMEA TOTALA A SPALETILOR ..... : 640

DATE DESPRE MATERIALELE DIN CARE ESTE ALCATUITA ZIDARIA

MARCA MORTARULUI ..... : M10

MARCA CARAMIZILOR ..... : C50

VALORILE REZISTENTELOR MEDII ALE ZIDARIEI (daN/cm<sup>2</sup>) :

Rezistente la compresiune axiale luate in calcul..... : 17

Valorile rezistențelor la întindere luate în calcul :

$R_{t0}$ ..... : 1.65

$R_{tm}$ ..... : 1.9

$R_{t0}$ ..... : 1.9

$R_{tf}$ ..... : 1.1

S	NR.	F	P	H	X	XG	A <sub>tot.</sub>	T <sub>y</sub>
P	TOT.	L	CM	CM	CM	CM	CM <sup>2</sup>	CM <sup>4</sup>
A	ELIM.	F						
D	M							
E	E							
T	N							
	I							
+-----DATE DE INTRARE-----+-----REZULTATE-----+								
1	3	1	.3750E+02	.1100E+03	.1875E+02			
		2	.7020E+03	.3750E+02	.3685E+03			
		3	.3750E+02	.2000E+03	.7503E+03	.4214E+03	.3795E+05	.263073E+10
2	1	1	.1600E+03	.2500E+02	.8000E+02			
		1	.1600E+03	.2500E+02	.8000E+02	.8000E+02	.4000E+04	.953333E+07
3	2	1	.1050E+03	.2500E+02	.9250E+02			
		2	.7500E+02	.1750E+03	.1975E+03	.1438E+03	.1900E+04	.382059E+06
4	2	1	.3750E+02	.7000E+02	.1875E+02			
		2	.3000E+03	.2500E+02	.1075E+03	.1438E+03	.1013E+05	.111929E+09
5	2	1	.3750E+02	.7000E+02	.1875E+02			
		2	.3000E+03	.2500E+02	.1075E+03	.1438E+03	.1013E+05	.111929E+09
6	1	1	.5100E+03	.2500E+02	.2550E+03			
		1	.5100E+03	.2500E+02	.2550E+03	.2550E+03	.1275E+05	.278356E+09
7	2	1	.3750E+02	.6000E+02	.1875E+02			
		2	.6000E+02	.3750E+02	.6750E+02	.4313E+02	.4500E+04	.361230E+07
8	1	1	.3400E+03	.3750E+02	.1700E+03			
		1	.3400E+03	.3750E+02	.1700E+03	.1700E+03	.1275E+05	.122825E+09
9	3	1	.6000E+02	.3750E+02	.4000E+02			
		2	.3750E+02	.1200E+03	.9875E+02			
		3	.4000E+02	.3750E+02	.1375E+03	.8563E+02	.9000E+04	.133840E+06
10	2	1	.3750E+02	.1500E+03	.1875E+02			



**LUCRAREA: EXPERTIZA TEHNICA REFERITOARE LA NIVELUL DE  
ASIGURARE LA SOLICITARI SEISMICE A CONSTRUCTIEI DIN BUCURESTI,  
STR. ORHIDEELOR NR.6, SECTOR 6****EXPERT TEHNIC IN CONSTRUCȚII ATESAT  
CONF. F.3.731/14.10.1981 (CERTIFICAT  
NR.182/15.08.1992) ing. Serban Paunescu**

	2	.1600E+03	.3750E+02	.1170E+03	.6972E+02	.1163E+03	.417702E+08
11	1	.1600E+03	.3750E+02	.5000E+02			
	1	.1600E+03	.3750E+02	.5000E+02	.5000E+02	.3750E+04	.312500E+07
12	1	.1600E+03	.3750E+02	.5000E+02			
	1	.1600E+03	.3750E+02	.5000E+02	.5000E+02	.3750E+04	.312500E+07
13	1	.2400E+03	.3750E+02	.1200E+03			
	1	.2400E+03	.3750E+02	.1200E+03	.1200E+03	.3000E+04	.432000E+08
14	2	.3750E+02	.2400E+03	.1875E+02			
	2	.3750E+02	.3750E+02	.2225E+03	.1423E+03	.2238E+03	.385971E+08
15	2	.3750E+02	.3750E+02	.1850E+03			
	2	.3750E+02	.1300E+03	.3888E+03	.2380E+03	.1875E+03	.308624E+08
16	2	.1250E+02	.1000E+03	.1250E+02			
	2	.9300E+02	.2500E+02	.7000E+02	.3974E+02	.4750E+04	.556425E+07
17	2	.1400E+03	.2500E+02	.2000E+03			
	2	.2500E+02	.1000E+03	.4125E+03	.2425E+03	.1250E+03	.223776E+09
18	1	.1200E+03	.2500E+02	.1000E+03			
	1	.1200E+03	.2500E+02	.1000E+03	.1000E+03	.5000E+04	.166667E+08
19	1	.1300E+03	.2500E+02	.6500E+02			
	1	.1300E+03	.2500E+02	.6500E+02	.6500E+02	.3250E+04	.157708E+07
20	1	.1900E+02	.2500E+02	.4500E+02			
	1	.1900E+02	.2500E+02	.4500E+02	.4500E+02	.2250E+04	.151875E+07
21	1	.1270E+03	.2500E+02	.1350E+03			
	1	.1270E+03	.2500E+02	.1350E+03	.1350E+03	.6750E+04	.410062E+08
22	1	.1360E+03	.2500E+02	.1800E+03			
	1	.1360E+03	.2500E+02	.1800E+03	.1800E+03	.9000E+04	.572000E+08
23	1	.1100E+03	.2500E+02	.5000E+02			
	1	.1100E+03	.2500E+02	.5000E+02	.5000E+02	.2500E+04	.708333E+07
24	1	.1650E+03	.2500E+02	.3250E+03			
	1	.1650E+03	.2500E+02	.3250E+03	.3250E+03	.1625E+05	.572135E+09
25	2	.1450E+03	.2500E+02	.2300E+03			
	2	.2500E+02	.1000E+03	.4725E+03	.2733E+03	.1400E+05	.323676E+09
26	1	.1100E+03	.3750E+02	.5000E+02			
	1	.1100E+03	.3750E+02	.5000E+02	.5000E+02	.3750E+04	.312500E+07
27	1	.1100E+03	.3750E+02	.5000E+02			
	1	.1100E+03	.3750E+02	.5000E+02	.5000E+02	.3750E+04	.312500E+07
28	1	.1100E+03	.3750E+02	.5000E+02			
	1	.1100E+03	.3750E+02	.5000E+02	.5000E+02	.3750E+04	.312500E+07
29	1	.1100E+03	.3750E+02	.5000E+02			
	1	.1100E+03	.3750E+02	.5000E+02	.5000E+02	.3750E+04	.312500E+07
30	1	.1100E+03	.3750E+02	.5000E+02			
	1	.1100E+03	.3750E+02	.5000E+02	.5000E+02	.3750E+04	.312500E+07
31	2	.1650E+02	.3750E+02	.4250E+02			
	2	.3750E+02	.8500E+02	.1038E+03	.7313E+02	.5375E+04	.827173E+07

SPALET	ARIA INCMPT/MODURILE DE REZISTENTA/LIMITILE SIMBURELUI CENTRAL				
	(cm2)	A1 (cm3)	A2	r1 (cm)	r2
1	.2914E+05	.624308E+07	.739785E+07	94.93	164.51
2	.4000E+04	.106667E+06	.106667E+06	26.67	26.67
3	.3230E+04	.266166E+06	.574884E+06	53.88	29.57
4	.8438E+04	.776635E+06	.577697E+06	57.06	76.93
5	.8438E+04	.778635E+06	.577697E+06	57.06	76.93
6	.1275E+05	.106375E+07	.103375E+07	85.00	85.00
7	.3636E+04	.837636E+05	.664332E+05	14.76	18.61
8	.1275E+05	.722500E+06	.722500E+06	56.67	56.67
9	.5906E+04	.156309E+06	.186212E+06	20.69	17.37
10	.7406E+04	.599133E+06	.326886E+06	28.12	51.54
11	.3750E+04	.625000E+05	.625000E+05	16.67	16.67
12	.3750E+04	.625000E+05	.625000E+05	16.67	16.67
13	.9000E+04	.360000E+06	.360000E+06	40.00	40.00
14	.1528E+05	.271168E+07	.145559E+07	63.63	110.54

**LUCRAREA: EXPERTIZA TEHNICA REFERITOARE LA NIVELUL DE  
ASIGURARE LA SOLICITARI SEISMICE A CONSTRUCTIEI DIN BUCURESTI,  
STR.ORHIDEELOR NR.6, SECTOR 6****EXPERT TEHNIC IN CONSTRUCTII ATESTAT  
CONF.H.G.731/14.10.1991 (CERTIFICAT  
NR.182/15.09.1992) ing.Serban Paunescu**

15	.1526E+05	.129688E+07	.182052E+07	97.09	69.17
16	.2875E+04	.140028E+06	.733307E+05	15.56	29.78
17	.1063E+05	.923788E+06	.122617E+07	98.00	73.92
18	.5000E+04	.166667E+06	.166667E+06	33.33	33.33
19	.3250E+04	.704167E+05	.704167E+05	21.67	21.67
20	.2250E+04	.337500E+05	.337500E+05	15.00	15.00
21	.6750E+04	.303750E+06	.303750E+06	45.00	45.00
22	.8000E+04	.540000E+06	.540000E+06	60.00	60.00
23	.2500E+04	.416667E+05	.416667E+05	16.67	16.67
24	.1667E+05	.176042E+07	.176042E+07	108.33	108.33
25	.1213E+05	.110431E+07	.152896E+07	109.21	84.59
26	.3750E+04	.625000E+05	.625000E+05	16.67	16.67
27	.3750E+04	.625000E+05	.625000E+05	16.67	16.67
28	.3750E+04	.625000E+05	.625000E+05	16.67	16.67
29	.3750E+04	.625000E+05	.625000E+05	16.67	16.67
30	.3750E+04	.625000E+05	.625000E+05	16.67	16.67
31	.4594E+04	.173178E+06	.167528E+06	26.28	17.74

Perete plin (spalari in consola) - rigiditatea riglelor de cuplare  
s a neglijatVALOAREA FORTELOR AXIALE IN FIECARE PERETE (SPALET).... N  
VALORIILE REPERTORIILOR UNITARE MEDII DE COMPRESIUNE...sigma0

Valorile potapabil corespundatoare efortului unitar

Spalari	N (daN)	sigma0(d)	tau0f cap.	tau0c cap.
1	.480000E+05	.126482E+01	0.80	0.20
2	.160000E+05	.400000E+01	1.30	1.00
3	.350000E+05	.388889E+01	1.30	1.00
4	.300000E+05	.296296E+01	1.20	0.80
5	.300000E+05	.296296E+01	1.20	0.80
6	.720000E+05	.564706E+01	1.60	1.50
7	.160000E+05	.355556E+01	1.30	1.00
8	.630000E+05	.494118E+01	1.50	1.30
9	.250000E+05	.277778E+01	1.20	0.80
10	.420000E+05	.361290E+01	1.30	1.00
11	.190000E+05	.506667E+01	1.50	1.30
12	.190000E+05	.506667E+01	1.50	1.30
13	.330000E+05	.366667E+01	1.30	1.00
14	.440000E+05	.192350E+01	1.00	0.50
15	.370000E+05	.197333E+01	1.00	0.50
16	.200000E+05	.421053E+01	1.30	1.00
17	.600000E+05	.536000E+01	1.50	1.30
18	.396000E+05	.382000E+01	1.40	1.10
19	.176000E+05	.541833E+01	1.50	1.30
20	.140000E+05	.622222E+01	1.60	1.50
21	.360000E+05	.533333E+01	1.50	1.30
22	.520000E+05	.577778E+01	1.60	1.50
23	.150000E+05	.600000E+01	1.60	1.50
24	.740000E+05	.455285E+01	1.50	1.30
25	.620000E+05	.442057E+01	1.30	1.00
26	.180000E+05	.480000E+01	1.50	1.30
27	.180000E+05	.480000E+01	1.50	1.30
28	.180000E+05	.480000E+01	1.50	1.30
29	.180000E+05	.480000E+01	1.50	1.30
30	.180000E+05	.480000E+01	1.50	1.30
31	.140000E+05	.219608E+01	1.00	0.50

GREUTATEA APERENTA GRUPULUI DE SPALETI 3- 1490000 daN



**LUCRAREA: EXPERTIZA TEHNICA REFERITOARE LA NIVELUL DE  
ASIGURARE LA SOLICITARI SEISMICE A CONSTRUCTIEI DIN BUCURESTI,  
STR. ORHIDEELOR NR.6, SECTOR 6**

**EXPERT TEHNIC IN CONSTRUCTII ATESTAT  
CONF. H.G. 731/14.10.1991 (JLRIH/ICA)  
NR.182/15.09.1992) ing. Serban Paunescu**

Valorile momentelor de fisurare ( $M_f = N \cdot r$ ) in functie  
de directia de actiune a fortei seismice :

Prima directie de actiune a fortei seismice - Mf1  
- A doua directie de actiune a fortei seismice - Mf2

**ARIILE ZONELOR COMPRESATE IN STADIUL DE RUPERE LA INCOVOTERR**

$A_{c1} = A_{c2} = (\sigma_{\text{max}} / R_{ct}) \cdot \text{Aria totala}$  - pentru sectiunile cu zidarie simpla

Spa et	Mf1	Mf2	Ac1	Ac2
1	.935071E+07	.788638E+07	.342817E+04	.342857E+04
2	.426667E+06	.426667E+06	.114286E+04	.114286E+04
3	.223566E+07	.103509E+07	.250000E+04	.250000E+04
4	.171169E+07	.230707E+07	.214286E+04	.214286E+04
5	.171169E+07	.230707E+07	.214286E+04	.214286E+04
6	.612000E+07	.612000E+07	.514286E+04	.514286E+04
7	.236207E+06	.297826E+06	.114286E+04	.114286E+04
8	.357000E+07	.357000E+07	.450000E+04	.450000E+04
9	.519200E+06	.434193E+06	.178571E+04	.178571E+04
10	.116101E+07	.216461E+07	.300000E+04	.300000E+04
11	.316067E+06	.316667E+06	.135714E+04	.135714E+04
12	.316667E+06	.316667E+06	.135714E+04	.135714E+04
13	.132000E+07	.132000E+07	.235714E+04	.235714E+04
14	.279903E+07	.521593E+07	.314286E+04	.314286E+04
15	.339250E+07	.235910E+07	.264286E+04	.264286E+04
16	.311287E+06	.589590E+06	.142057E+04	.142057E+04
17	.657227E+07	.494614E+07	.478571E+04	.478571E+04
18	.132000E+07	.132000E+07	.232857E+04	.232857E+04
19	.381333E+06	.381333E+06	.125714E+04	.125714E+04
20	.210000E+06	.210000E+06	.100000E+04	.100000E+04
21	.162000E+07	.162000E+07	.257143E+04	.257143E+04
22	.312000E+07	.312000E+07	.371429E+04	.371429E+04
23	.250000E+06	.250000E+06	.107143E+04	.107143E+04
24	.801667E+07	.801667E+07	.528571E+04	.528571E+04
25	.677113E+07	.524481E+07	.442857E+04	.442857E+04
26	.300000E+06	.300000E+06	.128571E+04	.128571E+04
27	.300000E+06	.300000E+06	.128571E+04	.128571E+04
28	.300000E+06	.300000E+06	.128571E+04	.128571E+04
29	.300000E+06	.300000E+06	.128571E+04	.128571E+04
30	.300000E+06	.300000E+06	.128571E+04	.128571E+04
31	.367906E+06	.248415E+06	.100000E+04	.100000E+04

**INALTIMELE ZONELOR COMPRESATE (x1 si x2)**

**DISTANTELE c1 si c2 DE LA CENTRELE DE GREUTATE ALE ZONELOR COMPRESATE  
Ac1 si Ac2 PINA LA FIBRELE EXTREME COMPRESATE RESPECTIVE**

spalet	x1	x2	c1	c2
1	.311889E-02	.171429E+02	.155844E+02	.857143E-01
2	.457143E-02	.457143E+02	.228571E-02	.228571E-02
3	.100000E-03	.142857E+02	.500000E-02	.714286E-01
4	.306122E-02	.857143E+02	.153061E-02	.428571E-02
5	.306122E-02	.857143E+02	.153061E-02	.428571E-02
6	.205714E+03	.205714E+03	.102857E-03	.102857E-03
7	.190476E+02	.306762E+02	.952381E-01	.152381E+02
8	.120000E+03	.120000E+03	.600000E-02	.600000E+02
9	.476190E+02	.425810E+02	.239095E-02	.239095E+02
10	.200000E+02	.800000E+02	.100000E-02	.400000E+02
11	.361905E+02	.361905E+02	.180352E-02	.180352E+02





**LUCRAREA: EXPERTIZA TEHNICA REFERITOARE LA NIVELUL DE ASIGURARE LA SOLICITARI SEISMICE A CONSTRUCTIILOR DIN BUCURESTI, STR. ORHIDEELOR NR. 8, SECTOR 6**

**EXPERT TEHNIC IN CONSTRUCTII ATSTAT CONF. HG 731/14.10.1991 (CERTIFICAT NR. 152/15.09.1992) Ing. Serban Paunescu**

12	.361905E+02	.361905E+02	.180952E+02	.100952E+02
13	.626571E+02	.626571E+02	.314286E+02	.314286E+02
14	.130902E+02	.838095E+02	.054762E+01	.419048E+02
15	.704762E+02	.203297E+02	.352381E+02	.101648E+02
16	.142937E+02	.571429E+02	.714286E+01	.285714E+02
17	.191429E+03	.116429E+03	.957143E+02	.403038E+02
18	.113143E+03	.113143E+03	.565714E+02	.565714E+02
19	.502857E+02	.502857E+02	.251429E+02	.251429E+02
20	.400000E+02	.400000E+02	.200000E+02	.200000E+02
21	.102857E+03	.102857E+03	.514286E+02	.514286E+02
22	.148571E+03	.148571E+03	.742857E+02	.742857E+02
23	.428571E+02	.428571E+02	.214286E+02	.214286E+02
24	.211429E+03	.211429E+03	.105714E+03	.105714E+03
25	.177143E+03	.102143E+03	.905714E+02	.347408E+02
26	.342857E+02	.342857E+02	.171429E+02	.171429E+02
27	.342857E+02	.342857E+02	.171429E+02	.171429E+02
28	.342857E+02	.342857E+02	.171429E+02	.171429E+02
29	.342857E+02	.342857E+02	.171429E+02	.171429E+02
30	.342857E+02	.342857E+02	.171429E+02	.171429E+02
31	.266667E+02	.117647E+02	.133333E+02	.538235E+01

VALORILE FORTELOR TAIE TOARE ASOCIATE MOMENTELOR DE ASIGURARE  
PENTRU AMBELE SENSURI DE ACTIUNE ALE FORTELOR SEISMICE ORIZONTALE  
 $Q_{t1} = 1,5 * M_1 / h$

VALORILE MOMENTELOR INCOVOIETOARE ULTIME  
 $M_{u1} = X * (y_1 - c_1)$   $M_{u2} = N * (y_2 - c_2)$

VALORILE FORTELOR VALE TOARE ASOCIATE MOMENTELOR INCOVOIETOARE ULTIME  
PENTRU AMBELE SENSURI DE ACTIUNE ALE FORTELOR SEISMICE ORIZONTALE  
 $Q_{u1} = 1,5 * M_{u1} / h$

spa. et	Q <sub>t1</sub>	Q <sub>t2</sub>	M <sub>u1</sub>	M <sub>u2</sub>	Q <sub>u1</sub>	Q <sub>u2</sub>
1	.2193E+05	.1951E+05	.1943E+08	.1868E+08	.4068E+05	.3904E+05
2	.1000E+04	.1000E+04	.9143E+06	.9143E+06	.2143E+04	.2143E+04
3	.5240E+04	.2426E+04	.3274E+07	.2078E+07	.7673E+04	.4866E+04
4	.4012E+04	.5907E+04	.3953E+07	.4527E+07	.9031E+04	.1081E+05
5	.4012E+04	.5907E+04	.3953E+07	.4527E+07	.9031E+04	.1001E+05
6	.1434E+05	.1434E+05	.1035E+08	.1035E+08	.2567E+05	.2567E+05
7	.3535E+03	.0980E+03	.5376E+06	.8282E+06	.1260E+04	.1460E+04
8	.8367E+04	.8367E+04	.6930E+07	.6930E+07	.1624E+05	.1624E+05
9	.1212E+04	.1018E+04	.1545E+07	.1212E+07	.3622E+04	.3841E+04
10	.2768E+04	.5073E+04	.2508E+07	.3697E+07	.5678E+04	.8641E+04
11	.7422E+03	.7422E+03	.6062E+06	.6062E+06	.1421E+04	.1421E+04
12	.7422E+03	.7422E+03	.6062E+06	.6062E+06	.1421E+04	.1421E+04
13	.3094E+04	.3094E+04	.2923E+07	.2923E+07	.6850E+04	.6850E+04
14	.6682E+04	.1222E+05	.5975E+07	.9823E+07	.1400E+05	.2302E+05
15	.8420E+04	.5998E+04	.7001E+07	.5896E+07	.1750E+05	.1382E+05
16	.7236E+03	.1382E+04	.6519E+06	.9338E+06	.1528E+04	.2189E+04
17	.1540E+05	.1139E+05	.9835E+07	.9527E+07	.2305E+05	.2233E+05
18	.3094E+04	.3094E+04	.1720E+07	.1720E+07	.4031E+04	.4031E+04
19	.8938E+03	.8938E+03	.7015E+06	.7015E+06	.1644E+04	.1644E+04
20	.4922E+03	.4922E+03	.3500E+06	.3500E+06	.8203E+03	.8203E+03
21	.3797E+04	.3797E+04	.3009E+07	.3009E+07	.7051E+04	.7051E+04
22	.7313E+04	.7313E+04	.5497E+07	.5497E+07	.1288E+05	.1288E+05
23	.5839E+03	.5839E+03	.4266E+06	.4266E+06	.1004E+04	.1004E+04
24	.1879E+05	.1879E+05	.1623E+08	.1623E+08	.3800E+05	.3800E+05
25	.1507E+05	.1229E+05	.1145E+08	.1097E+08	.2634E+05	.2571E+05
26	.7031E+03	.7031E+03	.5914E+06	.5914E+06	.1386E+04	.1386E+04
27	.7031E+03	.7031E+03	.5914E+06	.5914E+06	.1386E+04	.1386E+04

**LUCRAREA: EXPERTIZA TEHNICA REFERITOARE LA NIVELUL DE  
ASIGURARE LA SOLICITARI SEISMICE A CONSTRUCTIEI DIN BUCURESTI,  
STR.ORHIDEELOR NR.6, SECTOR 6****EXPERT TEHNIC IN CONSTRUCTII ATSTAT  
CONF. J.G.731/14.10.1991 (CERTIFICAT  
NR.182/15.09.1992) ing.Serban Paunescu**

28 .7231E+03 .7031E+03 .5914E-06 .5914E+06 .1386E-04 .1386E+04  
 29 .7231E+03 .7031E+03 .5914E-06 .5914E+06 .1386E-04 .1386E+04  
 30 .7231E+03 .7031E+03 .5914E-06 .5914E+06 .1386E-04 .1386E+04  
 31 .8623E+03 .5922E+03 .6371E-06 .6089E+06 .1962E-04 .1427E+04

VALORILE FORTELOR TAIEATOARE ASOCIATE RUPERII DEFA S-CAIUN INCLINATE  
 $Q_{fcap} = q_{fcap} * (Aria_{inclinat})$

FORTELE TAIEATOARE ASOCIATE RUPERII IN SECTIUNI INCLINATE,  
 IN ZONA CONFIRMATA, IN STADIUL DE CEDARE  
 $Q_L = q_{Lcap} * (Aria_{inclinat})$

VALORILE FORTELOR ORIZONTUALE CAPABILE SA LUNECARE IN BOSTURILE ZIDARIEI  
 $Q_L = \mu_{inf} * N$  - s-a considerat in calcul  $\mu_{inf} = 0.7$

VALOAREA FORTEI TAIEATOARE CAPABILE IN STADIUL ULTIM  
 $Q_{cap} = \min(Q_u, Q_{L1}, Q_{L2})$

spaler	$Q_{fcap}$	$Q_u$	$Q_L$	$Q_{cap1}$	$Q_{cap2}$
1	.233100E+05	.582770E+04	.1336000E+05	.233100E+05	.233100E-05
2	.520000E+04	.400000E+04	.112000E+05	.214286E+04	.214286E-04
3	.682500E+04	.523000E+04	.245000E+05	.682500E+04	.486572E-04
4	.101250E+05	.675000E+04	.210000E+05	.903121E+04	.101250E-05
5	.101250E+05	.675000E+04	.210000E+05	.903121E+04	.101250E-05
6	.204000E+05	.191250E+05	.504000E+05	.204000E+05	.204000E-05
7	.475813E+04	.365625E+04	.112000E+05	.126004E+04	.146763E-04
8	.191250E+05	.163750E+05	.441000E+05	.162422E+05	.162422E-05
9	.708750E+04	.472500E+04	.175000E+05	.362200E+04	.284089E-04
10	.982913E+04	.740625E+04	.294000E+05	.587847E+04	.864107E-04
11	.502500E+04	.487500E+04	.133000E+05	.142076E+04	.142076E-04
12	.562500E+04	.497500E+04	.133000E+05	.142076E+04	.142076E-04
13	.117000E+05	.900000E+04	.231000E+05	.685045E+04	.605045E-04
14	.102813E+05	.764063E+04	.306000E+05	.140002E+05	.102813E-05
15	.102813E+05	.764063E+04	.306000E+05	.140002E+05	.102813E-05
16	.373750E+04	.287500E+04	.140000E+05	.152781E+04	.218867E-04
17	.159375E+05	.138125E+05	.409000E+05	.159375E+05	.159375E-05
18	.900000E+04	.105000E+05	.277200E+05	.403071E+04	.403071E-04
19	.497500E+04	.422500E+04	.125200E+05	.184411E+04	.164411E-04
20	.380000E+04	.337500E+04	.980000E+04	.820313E-03	.820313E-03
21	.101250E+05	.877500E+04	.252000E+05	.705134E+04	.705134E+04
22	.144000E+05	.135000E+05	.364000E+05	.128839E+05	.128839E+05
23	.100000E+04	.375000E+04	.105000E+05	.100446E+04	.100446E+04
24	.243750E+05	.211250E+05	.516000E+05	.243750E+05	.243750E+05
25	.157625E+05	.121250E+05	.434000E+05	.157625E+05	.157625E+05
26	.562500E+04	.487500E+04	.126000E+05	.138616E+04	.138616E+04
27	.562500E+04	.487500E+04	.126000E+05	.138616E+04	.138616E+04
28	.562500E+04	.487500E+04	.126000E+05	.138616E+04	.138616E+04
29	.562500E+04	.487500E+04	.126000E+05	.138616E+04	.138616E+04
30	.562500E+04	.487500E+04	.126000E+05	.138616E+04	.138616E+04
31	.409375E+04	.229688E+04	.980000E+04	.196191E+04	.142710E+04



LUCRAREA: EXPERTIZA TEHNICA REFERITOARE LA NIVELUL DE  
ASIGURARE LA SOLICITARI SEISMICE A CONSTRUCTIEI DIN BUCURESTI,  
STR. ORHIDEELOR NR. 6, SECTOR 6

EXPERT TEHNIC IN CONSTRUCTII ALE STATI  
CONF. HG 731/14.10.1991 (CERTIFICAT  
NR. 182/16.05.1992) **ing. Serban Paunescu**

**FORTA TAIETOARE SEISMICA DE BAZA CAPABILA PENTRU AMBELE  
SENSURI DE ACTIUNE A FORTELOR SEISMICE**

Pentru primul sens	Scap.=	.230650E+06
Pentru al doilea sens	Scap.=	.233010E+06

**VALOREA COEFICIENTULUI  $q$  MEDIU PE ANSAMBLUL STRUCTURII  
CONSIDERATE IN CALCUL  
CALCULUL S-A EFECTUAT PENTRU AMBELE SENSURI DE ACTIUNE  
A FORTELOR SEISMICE ORIZONTALE**

Primul sens	- $q$ mediu =	.203745E+01
Al doilea sens	- $q$ mediu =	.213303E+01

**FORTA TAIETOARE SEISMICA DE BAZA CONVENTIONALA DETERMINATA  
CONFORM PREVEDERILOR NORMATIVULUI P100/1-2006  
SI COEFICIENTUL SEISMIC GLOBAL**

Pentru primul sens	Scod =	.4388E+06	Coef. cod. =	.294
Pentru al doilea sens	Scod =	.4191E+06	Coef. cod. =	.281

**GRADUL DE ASIGURARE AL STRUCTURII**

Pentru primul sens	R=	0.526
Pentru al doilea sens	R=	0.556

**REZULTAT FINAL R= 0.526**