

User Manual 10A. DIMENSIONING Part 1/4: Scenarios - Diagrams

	πκός Κόμβων			Σιδηρώ\	1		5	Ξύλινα	
Συνδυασμοί	Πλάκ	ες	∆окоі	Στύ	λοι	Πέδ	διλα	On	λισμο
ευνδυασμοί Σει	r Φορτίσεων	(101)	Аσт.	Λειτ.	+X	X	+Z	Z	No
Συνδυασμοί							۸/A	Κατά	i ^
1(5) +1.35Lc1	1+1.50Lc2						A		
2(1) +1.00Lc1	1+0.50Lc2						Α		
3(2) +1.00Lc1	1+0.30Lc2+1	.00Lc3+0.3	0Lc4+1.0	0Lc5+0.3	0Lc6+0	.30Lc7	Α	+X	
4(2) +1.00Lc1	1+0.30Lc2+1	.00Lc3+0.3	0Lc4+1.0	0Lc5+0.3	0Lc60	.30Lc7	Α	+X	
5(2) +1.00Lc1	1+0.30Lc2+1	.00Lc3+0.3	0Lc4+1.0	0Lc50.3	0Lc6+0	.30Lc7	Α	+X	
6(2) +1.00Lc1	1+0.30Lc2+1	.00Lc3+0.3	30Lc4+1.0	0Lc50.3	0Lc60	.30Lc7	Α	+X	
7(2) +1.00Lc1							Α	+X	
8(2) +1.00Lc1	1+0.30Lc2+1	.00Lc3+0.3	30Lc41.0	0Lc5+0.3	0Lc60	.30Lc7	Α	+X	
9(2) +1.00Lc1							A	+X	
10(2) +1.00Lo	c1+0.30Lc2+	1.00Lc3+0.	30Lc41.	00Lc50	30Lc6-	0.30Lc7	7 A	+X	, [×]
									-
ωντελεστές Στ	rάθμης	1/	(1-θ)	EC-8	_Greek	Dynami	c (1).cm	0	`
	х	Y	Z		Eid	nywyń 1	Συνδυασ		
Στάθμη	~		-			9100111		μων	
	1.000	1.000	1.000		Yпо/		; Συνδυα		
			-		Yno)				
0 - 0.00	1.000	1.000	1.000				; Συνδυα I Calc		
0 - 0.00 1 - 300.00	1.000	1.000 1.000	1.000		Συνδυα	ιογισμός Επα	; Συνδυα I Calc	ισμών 101	πης
0 - 0.00 1 - 300.00	1.000	1.000 1.000	1.000		Συνδυα πόματη	ιογισμός Επα ισμός G· ι Διαστα	; Συνδυα i Calc +ψ2Q	Ισμών 101 τη Μελέ	
	1.000	1.000 1.000	1.000	End	Συνδυα πόματη αναυπολ	ιογισμός Επα ισμός G· ι Διαστα ιογισμός	; Συνδυα i Calc +ψ2Q σιολόγηα ; μεγεθώ	σμών 101 τη Μελέ νν ΚΑΝ.Ι	ENE.
0 - 0.00 1 - 300.00	1.000	1.000 1.000	1.000	End	Συνδυα πόματη αναυπολ	ιογισμός Επα ισμός G· ι Διαστα ιογισμός	; Συνδυα l Calc +ψ2Q σιολόγηα	σμών 101 τη Μελέ νν ΚΑΝ.Ι	ENE.



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Chapter 10: Sizing -Scenarios - Diagrams (part 1/4)

				SCADA Pro 20 3	2Bit - [(0) Scada : 1-260.00 (D:\	MELETES\stam15\stam1	5)]
Βασικό Μοντελοποίηση Εμφάν	ιση Εργαλεία Πλάκες	Φορτία Ανάλυση	Αποτελέσματα	Διαστασιολόγηση	Ξυλότυποι Πρόσθετα	Βελτιστοποίηση	
ΕΚΩΣ 2000-ΕΑΚ 1 (C -) Ενεργό Σενάριο Παρά- Ενοποίηση	Συνέχειες Έλεγχος Αποτελέ-	Χαρακτη- Επίλυση Λυγ	β μα μαία μομός Έλεγχος Αποτελέ-	μ Έλεγχος Αποτελέ-	Καριώνου Καριών Καριώνου Καριώνου Καριώνου Καριών Καριώνου Καριώνου Καριώνου Καριώνου Καριώνου Καριών Καριώνου Καριών Κα	Διαστασ. Διαστασ.	Έλεγχος
μετροι Μελών. Σενάρια	δοκών * Όπλιση * σματα * Δοκοί	ρισμός * * Ικανοτικός έλεγχος	Όπλιση - σματα - Υποστυλώματα	Όπλιση τοματα τ Πέδιλα	Τομών - Πλάκες - σματα - Πλάκες - Πλένματα		Τοιχοποιίας Μέλους -
ΓΕΝΙΚΑ			ΜΠΕΤΟΝ			Τ(

The 10th Module is called "DISCUSSION" and includes the following groups of commands:

- ✓ Scenarios GENERAL
- √ Beams
- ✓ Equitable Control
- ✓ Pillars
- √ Sandals
- √ Slabs-Mesh
- √ Iron
- √ Wooden
- √ Masonry
- √ Charts GENERAL

The Sizing manual is divided into 4 parts:

1. Part 1/4 GENERAL REQUIREMENTS FOR ALL MATERIALS

BETTON

- 2. Part 2/4 COMMANDS FOR BETTING
- 3. Part 3/4 COMMANDMENTS FOR RAIL AND WOOD
- 4. Part 4/4 REQUIREMENTS FOR WALLING

After the completion of the model, the input of the loads, the execution of the analysis and creation of the combinations, the "Dimensioning" of the structural elements of the design follows, where the adequacy check is performed, based on the regulation selected in the "Dimensioning scenario" and the reinforcement of the concrete elements is entered.

With SCADA Pro you can dimension projects made of Concrete, Metal, Wood, Load-bearing Masonry and a combination of these.

Scenarios



The "Scenarios" field contains the commands to create a new scenario, the list of scenarios and the sizing parameters.

In addition, a new set of mandates has been added concerning the Consolidation of Members:

- poles and beams for Metal and Wooden
- ...for the <u>Betonens</u>.

1.1 New

	8	s			
13	e.				
	٥.		н	r	

Néo To create a script for sizing. Enter the name, select the reference legislation and

	Νέο	
Scenario	×	
1	Ονομα 1 Τύπος ΕC2-EC3 🔍 Υ Νέο Ενημέρωση	
	Διαγραφή Διαστασιολόγησης Σκυρόδεμα Συνδέσεις Σιδηρά Εφαρμογή Συνολικός Οπλισμός Κτιρίου	EKΩΣ 2000-EAK EC2-EC3 NTC_2008 EC2_Italia EC2_Cyprus Παλαιός 1959-84 Παλαιός 1984-93 Austria
Έξοδος	Αποθήκευση Εισαγωγή Συνολική Διαγραφή Ενισχύσεων Δοκών Στύλων	SBC304-306 EC5 EC6-EC8(3) EC2-W/O EC8 NTC_2018

OBSERVATIONS:

The designation EKOS 2000-EAK, EC2, or Old, refers to the method of analysis as well as the method of dimensioning of concrete sections. It goes without saying that if you have used, for example, a predefined ECK analysis scenario then you will also select ECOS 2000 - ECK dimensioning type.

For metals, EC3 is applied through the programme and is included in all scenarios regardless of the fact that there is no corresponding Greek regulation.

If you are modifying an existing script, select

_			
- EV	ημέ	$-\infty$	
L V	1 pc	բա	

In the "Delete Dimensioning" field, activate the corresponding checkbox and "Apply", to delete the results of a previous dimensioning (for concrete elements, steel sections, or connections respectively), to re-dimension using other combinations, or parameters, or scenario, etc.

_Διαγραφή Διαστ	ασιολόγησης
🔲 Σκυρόδεμα	🔲 Συνδέσεις
🔲 Σιδηρά	Εφαρμογή

1.1.1 Storage and import of modified armaments

Within the NEO field there is now the possibility to store the total armament

	Συνολικός Οπλισμός Κτ	npiou	
of the buildir		σαγωγή as v	vell as to delete in total all the
	•	Συνολική Διαγρα	φή Ενισχύσεων
		Δοκών	Στύλων
reinforceme	nt of beams and po	les	

With the Total Building Reinforcement field, it is now possible to store the reinforcement of beams and columns with the manual modifications made by the user in order to adjust the reinforcement of an existing design for the purpose of evaluation and redesign, as well as the reinforcements given to these elements. This command is very useful in cases where the need arises to remove, modify or add a new element.

PROCEDURE:

In these cases select Save, then return to the modelling, make the modifications to the vector, run the original EC8_Greek analysis (Static or Dynamic) and come back to the dimensioning. You load the combinations again and re-dimension the entire vector to pick up reinforcements and new or modified elements. By selecting the Insert command, all the rebars and any reinforcements that you manually inserted into the pre-existing elements are brought back in. It now remains to insert the existing reinforcements into the new or modified elements.

1.2 List

Includes the scripts you have created for the active script option, i.e. the script you will use.



1.3 Parameters

INUVUI	ικός Κόμβων			Σιδηρών	1		3	Ξύλινα		
Συνδυασμοί	Πλάκ	ες	Δοκοί	Στύ	Στύλοι Πέδι		έδιλα Οπί		ιλισμοί	
υνδυασμοί Σετ	r Φορτίσεων	(1	.01) Aor.	Λεπ.	+X	X	+Z	Z	No	
Συνδυασμοί							Λ/Α	Ката	i ^	
1(5) +1.35Lc1	l+1.50Lc2						Α			
2(1) +1.00Lc1	L+0.50Lc2						Α			
3(2) +1.00Lc1							Α	+X		
4(2) +1.00Lc1							Α	+X		
5(2) +1.00Lc1							A	+X		
6(2) +1.00Lc1							A	+X		
7(2) +1.00Lc1 8(2) +1.00Lc1							A	+X +X		
			0.30Lc41.0				Ā	+X		
9(2) + 1.00(6)				00000 010	020010	nooce,	-	10		
9(2) +1.00Lc1 10(2) +1.00Lc				.00Lc50.	30Lc6-	-0.30Lc7	7 A	+X	~	
				.00Lc50.	30Lc6-	-0.30Lc7	Υ Α		> `	
10(2) +1.00Lo	:1+0.30Lc2+						7 A		>	
10(2) +1.00Lc <	:1+0.30Lc2+		+0.30Lc41		_Greek	Dynami)	> ~	
10(2) +1.00Lc « υντελεστές Στ	:1+0.30Lc2+ άθμης	•1.00Lc3	+0.30Lc41 1/(1-θ)		_Greek Eio	Dynamio σγωγή Σ	c (1).cmł	ο μών	>	
10(2) +1.00Lc < υντελεστές Στ Στάθμη	:1+0.30Lc2+ άθμης Χ	1.00Lc3	+0.30Lc41 1 / (1-θ) Ζ		_Greek Eio	Dynamio αγωγή Σ λογισμός	c (1).cml Συνδυασ	ο μών	> ~	
10(2) +1.00Lc υντελεστές Στ Στάθμη 0 - 0.00 1 - 300.00	:1+0.30Lc2+ άθμης X 1.000	Y 1.00Lc3	+0.30Lc41 1 / (1-θ) Z 1.000	EC-8	_Greek Eio Yno/	Dynamio αγωγή Σ λογισμός	c (1).cml Συνδυασ ; Συνδυα Ι Calc	ο μών	>	
10(2) +1.00Lc υντελεστές Στ Στάθμη 0 - 0.00 1 - 300.00	 1+0.30Lc2+ άθμης X 1.000 1.000 	Y 1.000 1.000	+0.30Lc41 1 / (1-8) Z 1.000 1.000	EC-8	_Greek Eia Yno/ Συνδυα	Dynami αγωγή Σ λογισμός Επά ισμός G-	c (1).cml Συνδυασ ; Συνδυα Ι Calc	ο μών σμών 101	- 	
10(2) +1.00Lc υντελεστές Στ Στάθμη 0 - 0.00 1 - 300.00	 1+0.30Lc2+ άθμης X 1.000 1.000 	Y 1.000 1.000	+0.30Lc41 1 / (1-8) Z 1.000 1.000	EC-8	_Greek Eia Yno) Συνδυα πόματη	Dynami αγωγή Σ λογισμός Επά ισμός G- ι Διαστοι	c (1).cml Συνδυασ ; Συνδυα Calc +ψ2Q	ο μών σμών 101 η Μελέ	- ~ 	
10(2) +1.00Lc υντελεστές Στ Στάθμη 0 - 0.00	 1+0.30Lc2+ άθμης X 1.000 1.000 	Y 1.000 1.000	+0.30Lc41 1 / (1-8) Z 1.000 1.000	EC-8	_Greek Εια Υπολ Συνδυα υτόματη	Ο ynamio αγωγή Σ (ογισμός Επά ισμός G- η Διασται (ογισμός	c (1).cml Συνδυασ ; Συνδυα I Calc +ψ2Q πολόγηα	ο σμών 101 τη Μελέ ν KAN.I	- 	
10(2) +1.00Lc υντελεστές Στ Στάθμη 0 - 0.00 1 - 300.00	 1+0.30Lc2+ άθμης X 1.000 1.000 	Y 1.000 1.000	+0.30Lc41 1 / (1-8) Z 1.000 1.000	EC-8	_Greek Εια Υπολ Συνδυα υτόματη	Ο ynamio αγωγή Σ (ογισμός Επά ισμός G- η Διασται (ογισμός	c (1).cml Συνδυασ ; Συνδυα I Calc +ψ2Q πολόγηα ; μεγεθώ	ο σμών 101 τη Μελέ ν KAN.I	- 	

To set the parameters of the lavering depending on the carrier material:

Storage of the sizing parameters of the active scenario: Διάβασμα

Καταχώρηση

Once you have configured the sizing parameters, you can now save them in a file to use them in your next study.

Pressing the "Register" button opens the storage box

Save As								>
个 🔜 > Th	is PC > BOOTCAM	(C:) > meletes > 1d	lokos > scaanal >		~ O	Search scaanal		P,
Drganize 👻 New folde	er							0
ConeDrive This PC Desktop Desktop Downloads Music Pictures Videos Videos New Volume (D: New Volume (D: NENSO (F:) INTENSO (F:)	Name Scen000 Scen002 & sbc.sdp	~	Date modified 10/5/2017 1:18 µµ 10/5/2017 1:43 µµ 10/5/2017 3:53 µµ	Type File folder File folder VLC media file (.s	Size 9	5 KB		
File name: test.s	dp							
Save as type: Design	n Parameter(*.sdp)							
Hide Folders						Save	Cancel	_

where you type a name (it is good to be relevant to the sizing scenario). The extension of these files is sdp scenery design parameters.

Similarly, with the "Read" option, you can load a previously saved parameter file into a study.

$ ightarrow + \uparrow$ $ ightarrow$ Thi	s PC → BOOTCAMP (C:) → mele	etes > 1dokos > scaanal >		v Ö	Sear	rch scaanal		۶
Irganize 🔻 New folde						1953 1953	• 🗊	
👝 iCloud Drive 🖈 ^	Name	Date modified	Туре	Size				
Dropbax	Scen000	10/5/2017 1:18 µµ	File folder					
	Scen002	10/5/2017 1:43 μμ	File folder					
ConeDrive	🛓 sbc.sdp	10/5/2017 3:53 μμ	VLC media file (.s	9	96 KB			
This PC								
Desktop								
Documents								
Downloads								
Music								
Music Pictures								
Pictures								
Pictures Videos								
Pictures Videos								
Pictures Videos BOOTCAMP (C:) New Volume (D:								

ATTENTION

A prerequisite for calling a configuration file is that the current sizing script is the same as the configuration script you are calling. Otherwise you will see the message



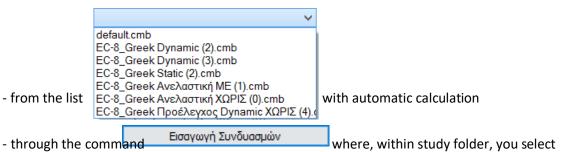
1.3.1 Combinations

OBSERVATION:

A Regardless of the material, a prerequisite for sizing is the calculation of combinations.

Συνδυασμοί

The selection of the .cmb file of the combinations registered by the analysis is either:



from the registered combinations the file of combinations with you will dimension

and then via the button

Υπολογισμός Συνδυασμών

button to make the calculation.

Ικανοτικ	κός Κόμβων	/		Σι	ιδηρών				Ξύλινα	
Συνδυασμοί	Πλάκ	κες	Δοκοί		Στύλοι		Пέδ	ιλα	On	λισμοί
υνδυασμοί Σετ 🤇	Φορτίσεων	(101) Ao	т. Л	εп. +	+X	X	+Z	Z	No
Συνδυασμοί								٨/٨	Α Κατά	i ^
1(14) +1.35Lc1	+1.50Lc2							A		
2(1) +1.00Lc1+	-0.50Lc2							Α		
3(2) +1.00Lc1+	0.30Lc2+	1.00Lc3-	+0.30Lc4+	1.00Lo	:5+0.30Lc	:7+0.	30Lc9	Α	+X	
4(2) +1.00Lc1+	-0.30Lc2+	1.00Lc3-	+0.30Lc4+	1.00Lo	5+0.30Lc	:70.	30Lc9	Α	+X	
5(2) +1.00Lc1+	+0.30Lc2+	1.00Lc3-	-0.30Lc4+	1.00Lo	c50.30Lc	:7+0.	30Lc9	Α	+X	
6(2) +1.00Lc1+	0.30Lc2+	1.00Lc3-	0.30Lc4+	1.00Lo	:50.30Lc	:70.	30Lc9	Α	+X	
7(2) +1.00Lc1+	0.30Lc2:	1.00Lc3-	+0.30Lc4	1.00Lo	5+0.301c	7+0.	30I c9	A	X	
8(2) +1.00Lc1+				1.00Lo	5+0.30Lc	:70.	30Lc9	Α	X	
9(2) +1.00Lc1+	H0.30Lc2:	1.00Lc3-	-0.30Lc4	1.00Lo 1.00Lo	5+0.30Lc	:70. :7+0.	30Lc9 30Lc9	A	X	
	H0.30Lc2:	1.00Lc3-	-0.30Lc4	1.00Lo 1.00Lo	5+0.30Lc	:70. :7+0.	30Lc9 30Lc9	A	X X	~ ~
9(2) +1.00Lc1+ 10(2) +1.00Lc1	H0.30Lc2:	1.00Lc3-	-0.30Lc4	1.00Lo 1.00Lo	5+0.30Lc	:70. :7+0.	30Lc9 30Lc9	A	X X	>
9(2) +1.00Lc1+ 10(2) +1.00Lc1 < ωντελεστές Στά	+0.30Lc2: .+0.30Lc2- θμης	1.00Lc3- -1.00Lc3	-0.30Lc4 30.30Lc4- 1 / (1-θ)	1.00Ld 1.00Ld -1.00l	5+0.30Lc	:70. :7+0. .c7(30Lc9 30Lc9).30Lc9	A	X X	>
9(2) +1.00Lc1+ 10(2) +1.00Lc1 < τυντελεστές Στό Στάθμη	+0.30Lc2: +0.30Lc2- θμης Χ	1.00Lc3- 1.00Lc3	0.30Lc4 30.30Lc4- 1 / (1-θ) Z	1.00Lo 1.00Lo	c5+0.30Lc c50.30Lc Lc50.30L	:70. :7+0. .c7(Εισα	30Lc9 30Lc9).30Lc9 Ιγωγή Σ	ΑΑ	X X лиών	>
9(2) +1.00Lc1+ 10(2) +1.00Lc1 < ωντελεστές Στά	+0.30Lc2: .+0.30Lc2- θμης	1.00Lc3- -1.00Lc3	-0.30Lc4 30.30Lc4- 1 / (1-θ)	1.00Ld 1.00Ld -1.00l	c5+0.30Lc c50.30Lc Lc50.30L	:70. :7+0. .c7(Εισα	30Lc9 30Lc9).30Lc9 Ιγωγή Σ	A	X X лиών	> ~
9(2) +1.00Lc1+ 10(2) +1.00Lc1 < τυντελεστές Στό Στάθμη	+0.30Lc2: +0.30Lc2- θμης Χ	1.00Lc3- 1.00Lc3	0.30Lc4 30.30Lc4- 1 / (1-θ) Z	1.00Ld 1.00Ld -1.00l	c5+0.30Lc c50.30Lc Lc50.30L	:70. :7+0. .c7(Εισα	30Lc9 30Lc9).30Lc9 Ιγωγή Σ	ΑΑ	X X лиών	>
9(2) +1.00Lc1+ 10(2) +1.00Lc1 < ωντελεστές Στό! Στάθμη 0 - 0.00	+0.30Lc2: +0.30Lc2- θμης X 1.000	1.00Lc3- -1.00Lc3 - Y 1.000	0.30Lc4 30.30Lc4- 1 / (1-θ) Z 1.000	1.00Ld 1.00Ld -1.00l	c5+0.30Lc c50.30Lc Lc50.30L	:70. :7+0. .c7(Εισα Υπολι	30Lc9 30Lc9).30Lc9 Ιγωγή Σ	Α Α Α Συνδυασ	X X лиών	~
9(2) +1.00Lc1+ 10(2) +1.00Lc1 < ωντελεστές Στόι Στάθμη 0 - 0.00 1 - 300.00	+0.30Lc2: +0.30Lc2- θμης X 1.000 1.000	1.00Lc3- -1.00Lc3- Y 1.000 1.000	0.30Lc4 30.30Lc4 1 / (1-0) Z 1.000 1.000	1.00Ld 1.00Ld -1.00l	25+0.30Lc 250.30Lc Lc50.30L	:70. :7+0. .c7(Εισα Υπολι	30Lc9 30Lc9). 30Lc9). 30Lc9 ηγωγή Σ ογισμός σμός G +	Α Α Α Συνδυασ Ευνδυασ Ευνδυασ	X X ημών	

Depending on the case and the conditions that are met, you can use either the combinations of static or dynamic to dimension the superstructure (as long as in the analysis you have "opened" the springs (not the footing)). You can also have run analyses with scenarios of different codes (e.g. EAK and EC8) and by dimensioning with the respective combinations you can see the differences that result.

In the "Combinations" field the list of all combinations is displayed.

The first number is the number of the combination and second, in brackets, is the number of the equation from which we obtain

The "L/A" column indicates the marginal state of the combination and the "Against" column indicates which direction is involved for the satisfactory control.

Συνδυασμοί Σετ Φορτίσεων	(101)	Αστ. Λειτ.	+X	X	+Z	Z	No	
								۰.

you can modify both the limit state and the direction.

In the column "L/A" you specify whether the specific combination is Failure or Functionality. If you want to make a change, you select the combination and press the

key Λειτ. ή Αστ.

-Z

The next column "Against" is about the satisfaction check and in which direction the particular

combination is involved. By selecting the corresponding button

you select the direction in which this combination will participate in the

+X -X +Z

performance of the satisfactory control. Finally, by selecting the you specify that the a particular combination will not participate in the satisfaction check. (See below 1.3.7 Capability Node)

Thanks to the bar:

1.3.1.1 Level Factors

In the field "Level coefficients"

Συντελεστές Στ	τάθμης		1	/ (1- 0)	
Level	х	Y		Z	
0 - 0.00	1.000	1.0	00	1.000	
1 - 400.00	1.000	1.0	00	1.000	
2 - 700.00	1.000	1.0	00	1.000	
3 - 1000.00	1.000	1.0	00	1.000	
4 - 1300.00	1.000	1.0	00	1.000	
5 - 1600.00	1.000	1.0	00	1.000	•

You can increase or decrease, by manually entering coefficients different from 1, the seismic actions per direction and level.

• The $1/(1-\theta)$ button, if selected, will do the 2nd order influence check, with automatic increase of the intensities when $0.1 \le 0.2$, at the levels required.

ATTENTION:

To take into account any modifications to the combinations, select the command again

 Υπολογισμός Συνδυασμών

 Συνδυασμός G+ψ2Q
 99

 The field
 applies only to the scenarios of the Greek regulation (EKOS).

1.3.1.2 Automatic Study Sizing

 Αυτόματη Διαστασιολόγηση Μελέτης

 The order

 allows you to dimension the whole study with a simple "click".

Set the parameters in the fields below and select "Automatic Study Sizing". The program will automatically carry out the entire sizing process that you include in the following groups and that is otherwise followed "Step by Step".

1.3.1.3 Recalculation of the sizes of CAN.Ltd.

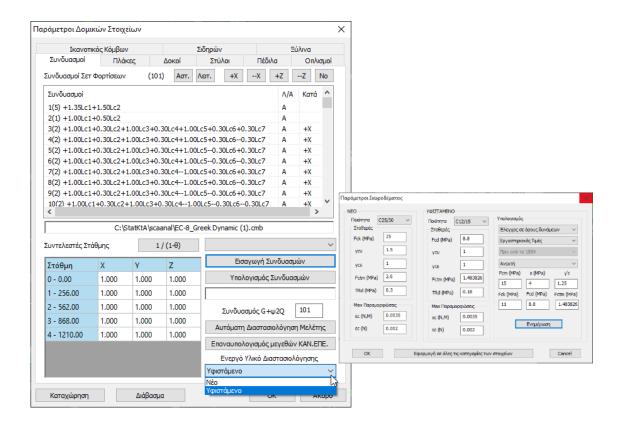
The order Enavaunoλογισμός μεγεθών KAN.EΠE. concerns the designs of existing structures controlled in accordance with the CEQS and is an automation that allows the recalculation of the CEQS sizes, and if the modification of the reinforcement according to the existing situation has already been carried out, to keep the existing shaped reinforcement when the characteristics of the material and the reinforcement coating are subsequently changed.

If, for example, you have already defined the existing strengths of your materials, dimensioned your design and already modified the reinforcements of the structural elements and then need to modify the strengths of your materials, you only need to make the change

and press the button to recalculate all the sizes provided for by the EIA without having to repeat the procedure. The program will automatically calculate the new sizes for all members of the study.

OBSERVATION:

During the recalculation of the .EPE sizes as well as the individual Strength Calculations in beams and columns, the strengths of the materials taken into account are the selected strengths in the parameters of the Dimensioning (either the New or the Existing):



OBSERVATION:

After you select the command open the window:

Επιλογή Παραμέτρων		×
Παράμετροι Υλικών Να γίνει ο επαναυπολογισμός με βάση	Στάθμη επιτελεστικότητας για τον υπολογισμό των ενισχύσεων	OK Cancel
Παράμετροι υπολογισμού ροπών αντοχής Δοκών Να ληφθεί υπόψη ο οπλισμός των παρειών Να ληφθεί υπόψη ο Λοιπός Πρόσθετος Οπλισμ (Έχει τοποθετηθεί αλλά δεν εμφανίζεται γραι	Ορισμός εκ νέα	ou V

"Material parameters"

Selecting:

- The current material parameters: the program calculates the strengths according the selected parameters
- The initial ones : the program calculates the strengths according to the initial ones, i.e. with the strengths of disbursement

This command was created to overcome the problem that occurred when in a structure we needed to selectively dimension one part of the structure with some strengths and another with different strengths (mixed building), usually due to the construction of the building in different periods of time (additions, arbitrary etc.) Without this option during the recalculation the program read the materials from the current parameters and not from the dimensioning. Now this problem has been overcome by now having the second option.

"Parameters for calculation of beam strength moments"

If you do not wish to change any parameters, just

In case you wish to change the parameters for calculating the strength moments of the beams,

Οπως εχουν ορισθεί αρχιι

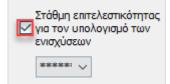
select Ορισμός εκ νέου 💛 " and you have among the options:

Take into account the reinforcement of the sidewalls. If checked, the side reinforcement will contribute to the calculation of the moment of resistance.

Take into account the Other Additional Armament. If checked, the additional reinforcement, which is not visible in the graphic, will contribute to the calculation of the moment of resistance.

NEW! "Level of performance for the calculation of aid"

Added the option to select the performance level, so that either by changing the method (inelastic - elastic), or by changing the level of performance, the reinforcements can be calculated en masse, without the need to change the reinforcement details of each reinforced member. To enable it you must check the checkbox



Attention!

by the analysis parameters, in the CANOPE button.

Therefore, in order for the level change to be done correctly in this case, it must first be changed from there, the analysis must be re-run, the new combinations must be saved and finally entered into the sizing. Then the recalculation can be done.

1.3.1.4 Active Sizing Material

Ενεργό Υλικό Διαστασιολόγησης	
Nέo	\sim
Νέο	
Υφιστάμενο	

By selecting Active Sizing Material the strengths of the materials taken into account are the selected strengths in the Sizing parameters (either New or Existing).

1.3.1.5 Materials

In the fields Plates, Beams, Columns, Sheets, at the top, there is the choice of the corresponding materials:

Ικανοτικό	ς Κόμβων		Σιδηρών		Ξύλινα
Συνδυασμοί	Πλάκες	Δοκοί	Στύλοι	Πέδιλα	Οπλισμοί
Σκυρόδεμα : C12	2/15 Xà	λυβας (Κύριος)	:S220	Χάλυβας (Συνδ	i/pωv) :S220

Where,

Σκυρόδεμα : C20/25

Χάλυβας (Κύριος) :B500C

Χάλυβας (Συνδ/ρων) :Β500C

choose the

quality of the material to be used for both concrete and reinforcement (main, connectors). By selecting a different quality for the concrete, the corresponding coefficients are automatically updated.

The new version of SCADA Pro 21 added the possibility of simultaneous definition of two material qualities for the structural elements: new and existing.

OBSERVATIONS:

- In the existing material, the calculation of the final compressive strength is now done automatically based on the corresponding provisions of the CEE.
- Then, the attribution of the quality of the material to the elements and consequently their classification (New or Existing) is done automatically with their dimensioning and this information is now stored in each member resulting in the complete separation of new and existing elements, which gives great flexibility to the designer for further processing.
- All three windows (Concrete Steel main Connectors) are divided into two sections:
 1. NEW (left) &
 - 2. BACK (right)

The procedure is the same for all 3 windows in detail:

1. Purely new construction

In the case of new construction, the definition of the material is done the same way as , completely ignoring the part of the dialogue box concerning existing material:

Σκυρόδεμα : C25/30 Χάλυβας (Κύριος) :S400s Χάλυβας (Συνδ/ρων) :S400s

Παράμετροι Σκυροδέματος		×
NEO		
Ποιότητα C25/30 🗸	Ποιότητα C20/25 🗸	Υπολογισμός
Σταθερές	Σταθερές	Έλεγχος σε όρους δυνάμεων 🛛 🗸
Fck (MPa) 25	Fcd (MPa) 11.46153	Εργαστηριακές Τιμές 🗸 🗸 🗸
γcu 1.5	γси 1	Πριν από το 1954 🛛 🗸
ycs 1	ycs 1	Ικανοποιητική 🗸
Fctm (MPa) 2.6	Fctm (MPa) 1.816541	Fcm (MPa) s (MPa) γ'c
TRd (MPa) 0.3		18.9 4 1.3
	TRd (MPa) 0.25	Fck (MPa) Fcd (MPa) Fctm (MPa)
Max Παραμορφώσεις	Max Παραμορφώσεις	14.9 11.46153 1.816541
εc (N,M) 0.0035	εc (N,M) 0.0035	
εс (N) 0.002	εс (N) 0.002	Ενημέρωση
Χάλυβας (Κύριων) ΝΕΟ	ΥΦΙΣΤΑΜΕΝΟ	Xashuanin
Ποιότητα S400s 🗸	Ποιότητα S400s 🗸	Υπολογισμός
Σταθερές	Σταθερές	Ελεγχος σε όρους δυνάμεων 🛛 🗸
Es (Gpa) 200	Es (Gpa) 200	Εργαστηριακές Τιμές 🗸 🗸 🗸
Fyk (MPa) 400	Fyd (MPa) 282.6086	Stahl I 🗸 🗸 🗸
vsu 1.15	vsu 1	Ικανοποιητική 🗸
		Fym (MPa) s γ's
yss 1	γss 1	365 40 1.15
Max Παραμόρφωση	Max Παραμόρφωση	Fyk (MPa) Fyd (MPa)
ες 0.02	εs 0.02	325 282.6086
		Ενημέρωση
ОК	Εφαρμογή σε όλες τις κατηγορίες τ	των στοιχείων Cancel

Select the material you want to use from the list.

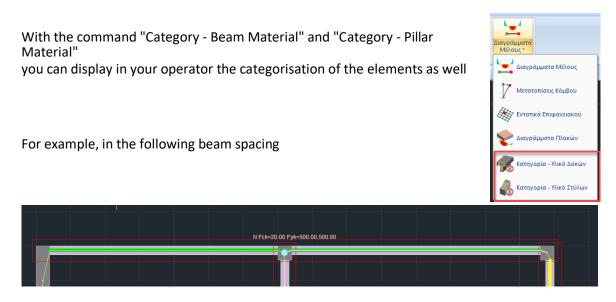
Note

The material listed on the previous screen for each building element respectively, is ALWAYS the new material.

Συνδυα	Ικανοτικά ασμοί		ων άκες	Δo	коі	Σιδηρών Στύλ	01	Πέδιλ		ύλινα Οπλισμα
	δεμα : C2	25/30	X	άλυβας ((Κύριος)	:S400s	Х	άλυβας	(Συνδ/	ρων) :S400
Ελεγχο Συνδυα	ι ισμός Φο	ρτίσεων	Επίλυση	ς Τομών		1 ~	A ~	Прос	θήκη	Διαγραφι
LC LC1 LC2	LG1 1.35 1.50	LG2	LG3	LG4	LG5	LG6	LG7	LG8	LG9	PL 0 1
Λειτα	ιηση Ελεγχος ωργικόπ Ρηγμάτω		Eúc	ος Ρωγμ	ińc (mm)	0.3	3]		
	 Βέλη Κάμ			a] a	. 15 ()	25	0]		
Кλір	ακα Διαγ	ραμμάτι	ov 1 m =	5		(kn / kn	lm)			

Then and before the initial sizing, the corresponding option in the parameter "Active Sizing Material" to be "New"

	κός Κόμβων				Σιδηρά	bν			Ξύλ	iva	
Συνδυασμοί	Πλάκε	ς	Док	coi	Στ	τύλοι	Πέδ	λα		Οπλ	ισμο
υνδυασμοί Σετ	Φορτίσεων	(1	101)	Аот.	Λειτ.	+X	X	+Z		Z	No
Συνδυασμοί								۸,	A	Κατά	^
1(5) +1.35Lc1-	+1.50Lc2							A			
2(1) +1.00Lc1-	+0.50Lc2							A			
3(2) +1.00Lc1-	+0.30Lc2+1.0	00Lc3+	-0.30Lc	4+1.0	0Lc5+0	.30Lc6+(0.30Lc7	Α		+X	
4(2) +1.00Lc1-	+0.30Lc2+1.0	00Lc3+	-0.30Lc	4+1.0	OLc5+0	.30Lc6().30Lc7	Α		+X	
5(2) +1.00Lc1-	+0.30Lc2+1.0	00Lc3+	-0.30Lc	4+1.0	OLc50	.30Lc6+().30Lc7	Α		+X	
6(2) +1.00Lc1-	+0.30Lc2+1.0	00Lc3+	-0.30Lc	4+1.0	0Lc50	.30Lc6().30Lc7	Α		+X	
7(2) +1.00Lc1-	+0.30Lc2+1.0	00Lc3+	-0.30Lc	41.0	OLc5+0	.30Lc6+().30Lc7	Α		+X	
8(2) +1.00Lc1-	+0.30Lc2+1.0	00Lc3+	-0.30Lc	41.0	OLc5+0	.30Lc6().30Lc7	Α		+X	
9(2) +1.00Lc1-	+0.30Lc2+1.0	00Lc3+	-0.30Lc	41.0	0Lc50	.30Lc6+().30Lc7	A		+X	
10(2) +1.00Lc1										+X	v
											, v
10(2) +1.00Lc1	L+0.30Lc2+1			.c41.						+X	
10(2) +1.00Lc1 <	L+0.30Lc2+1		+0.30L	.c41.i 0)		0.30Lc6-		A		+X ,	
10(2) +1.00Lc: « ίυντελεστές Στό	L+0.30Lc2+1 ιθμης	.00Lc3	+0.30L 1/(1- Z	.c41.i 0)		0.30Lc6- Eic	-0.30Lc7	Α	ισμώ	+X >	
10(2) +1.00Lc: < ωντελεστές Στά Στάθμη	ι+0.30Lc2+1 Θμης Χ	.00Lc3	1/(1- Z	.c41.i 0)		0.30Lc6- Eic	-0.30Lc7 σογωγή Σ	Α	ισμώ	+X >	
10(2) +1.00Lc: < υντελεστές Στό Στάθμη 0 - 0.00	L+0.30Lc2+1 θμης X 1.000	.00Lc3 Y 3.000	+0.30L 1/(1- Z 3. 3.	.c41.ι θ) .000		0.30Lc6- Ек Үпо	-0.30Lc7 σαγωγή Σ λογισμός	Α ίυνδυα Συνδι	ισμώ	+X > ν ών	
10(2) +1.00Lc: « ωντελεστές Στό Στάθμη 0 - 0.00 1 - 300.00	H+0.30Lc2+1 θμης X 1.000 3.000	.00Lc3 Y 3.000 3.000	+0.30L 1/(1- Z 3. 3. 3. 3.	.c41.1 θ) .000 .000	DOLC5	0.30Lc6- Εις Υπο. Συνδυς	-0.30Lc7 παγωγή Σ λογισμός ασμός G+	Α ωνδυα Συνδι -ψ2Q	ισμώ ιασμα 1	+X ν ών	
10(2) +1.00Lc: < υντελεστές Στό Στάθμη 0 - 0.00 1 - 300.00 2 - 600.00	H+0.30Lc2+1 θμης X 1.000 3.000 3.000	V 3.000 3.000 3.000	+0.30L 1/(1- Z 3. 3. 3. 3. 3.	e41.1 θ) .000 .000 .000	DOLC5	0.30Lc6- Ек Үпо	-0.30Lc7 παγωγή Σ λογισμός ασμός G+	Α ωνδυα Συνδι -ψ2Q	ισμώ ιασμα 1	+X ν ών	
10(2) +1.00Lc: < υντελεστές Στά Στάθμη 0 - 0.00 1 - 300.00 2 - 600.00 3 - 900.00	H+0.30Lc2+1 θμης X 1.000 3.000 3.000 3.000	V 3.000 3.000 3.000 3.000	+0.30L 1/(1- Z 3. 3. 3. 3. 3. 3.	e41.1 θ) 000 000 000 000	DOLC5	0.30Lc6- Εις Υπο. Συνδυς	-0.30Lc7 σαγωγή Σ λογισμός ασμός G + η Διασταα	Α ωνδυα Συνδι -ψ2Q πολόγι	ισμώ ιασμα [1 ηση Ν	+X × ών 01 4ελέτ	, Πης
10(2) +1.00Lc? υντελεστές Στά Στάθμη 0 - 0.00 1 - 300.00 2 - 600.00 3 - 900.00 4 - 1200.00	X 1.000 3.	V 3.000 3.000 3.000 3.000 3.000 3.000	+0.30L 1/(1- Z 3. 3. 3. 3. 3. 3. 3. 3. 3. 3.	e41.1 θ) .000 .000 .000 .000 .000	DOLC5	0.30Lc6- Εις Υπο. Συνδυα Αυτόματη	-0.30Lc7 σαγωγή Σ λογισμός ασμός G + η Διασταα	Α Συνδια Συνδι -ψ2Q πολόγι μεγεθ	σμώ νασμα 1 ηση Ν ών Κ	+X ν ν 01 Μελέτ ΑΝ.Ε	, ης ΠΕ.
10(2) +1.00Lc: ωντελεστές Στά μη 0 - 0.00 1 - 300.00 2 - 600.00 3 - 900.00 4 - 1200.00 5 - 1500.00	X 1.000 3.	V 3.000 3.000 3.000 3.000 3.000 3.000 3.000	+0.30L 1/(1- Z 3. 3. 3. 3. 3. 3. 3. 3. 3. 3.	eq1.0 θ) .000 .000 .000 .000 .000 .000	DOLC5	0.30Lc6- Εις Υπο. Συνδυς Αυτόματη παναυπο. Ένεργό	-0.30Lc7 σαγωγή Σ λογισμός ασμός G + η Διαστασ	Α Συνδια Συνδι -ψ2Q πολόγι μεγεθ	σμώ νασμα 1 ηση Ν ών Κ	+X ν ν 01 Μελέτ ΑΝ.Ε	, ης ΠΕ.



there is the designation (N), New material and the corresponding three characteristic strengths of concrete, main reinforcing steel and steel fasteners

2. Purely existing construction

The logic and course is similar to the new construction. You select a quality from the list and then, based on the provisions of the CEE, you select from the corresponding fields in the "Calculation" section

NEO	ΥΦΙΣΤΑΜΕΝΟ	
Ποιότητα C20/25 🗸	Ποιότητα C20/25 🗸	Υπολογισμός
Σταθερές	Σταθερές	Έλεγχος σε όρους παραμορφώσει 🗸
Fck (MPa) 20	Fcd (MPa) 16.66666	Εργαστηριακές Τιμές 🗸 🗸 🗸
уси 1.5	ycu 1	Πριν από το 1954 🛛 🗸
γcs 1	γcs 1	ΣΑΔ Υλικού Ανεκτή 🗸
Fctm (MPa) 2.2	Fctm (MPa) 2.210418	Fcm (MPa) s (MPa) γ'c
TRd (MPa) 0.25	TRd (MPa) 0.25	20 4 1.2 Fck (MPa) Fcd (MPa) Fctm (MPa)
Max Παραμορφώσεις	Μах Παραμορφώσεις	20 16.66666 2.210418
εc (N,M) 0.0035	εc (N,M) 0.0035	
ες (Ν) 0.002	εc (N) 0.002	Ενημέρωση
		1

NEO	ΥΦΙΣΤΑΜΕΝΟ	
Τοιότητα B500C 🗸	Ποιότητα Β500C 🗸	Υπολογισμός
		Έλεγχος σε όρους παραμορφώσει 🗸
Σταθερές	Σταθερές	Εργαστηριακές Τιμές 🗸 🗸
Es (Gpa) 200	Es (Gpa) 200	Stahl I
Fyk (MPa) 500	Fyd (MPa) 500	ΣΑΔ Υλικού Ανεκτή 🗸
γsu 1.15	γsu 1.15	ΣΑΔ Λεπτομερ. Ανεκτή 🗸
γss 1	γss 1	Fym (MPa) s γ's
Max Παραμόρφωση	Max Παραμόρφωση	Fyk (MPa) Fyd (MPa) 400 333.3333
εs 0.02	εs 0.02	Ενημέρωση

the corresponding parameters of your study based on the provisions of the relevant paragraph of the CEE. Once the selections are complete, you press the "**Update**" button and the corresponding final strengths are indicated in the fields below the material and are the ones that will be used by the program.

The coefficients ycu and ycs must remain unity.

In detail:

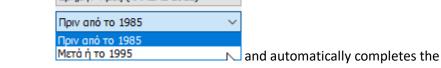
🔸 SKYRODEMA

You choose whether a calculation will be made:

- > in terms of Forces (Elastic analysis method q)
- > in terms of Deformation (Elastic m & Inelastic method)

You choose whether to set:

- Laboratory Values to be filled in the fields
- > In Absentia Prices (CANPE 2022) which also opens the field of choice of date



Fcm (MPa)

s (MPa)

or

4

fixed.

logging

(For compatibility reasons, and the Abandoned Prices of previous revision were retained.)

The last option is the Material SDS:

1.2

- > Windy
- Iconopoeia
- High

And it completes the

All other values are automatically filled in and the **Update** calculates the Constants for the Existing Concrete.

Παράμετροι Σκυροδέματος		×
NEO Ποιότητα C20/25 Σταθερές Fck (MPa) 20 γcu 1.5 γcs 1 Fctm (MPa) 2.2 TRd (MPa) 0.25 Max Πορομορφώσεις	ΥΦΙΣΤΑΜΕΝΟ Ποιότητα C16/20 Σταθερές Fcd (MPa) 10.83333 γcu 1 γcs 1 Fctm (MPa) 1.658632 TRd (MPa) 0.22 Max Παραμορφώσεις	Υπολογισμός Ελεγχος σε όρους παραμορφώσει Εργαστηριακές Τιμές Εργαστηριακές Τιμές Πριν από το 1954 ΣΑΔ Υλικού Ανεκτή Fcm (MPa) s (MPa) γ'c Γου 13 4 1.2 Fck (MPa) Fcd (MPa)
εc (N,M) 0.0035 εc (N) 0.002 ΟΚ Εφα	ες (N,M) 0.0035 ες (N) 0.002 ρμογή σε όλες τις κατηγορίες των	Ενημέρωση ν στοιχείων Cancel

HALYVAS:

Χάλυβας (Κύριων)			×
NEO Ποιότητα B500C Σταθερές Es (Gpa) 200 Fyk (MPa) 500 γsu 1.15 γss 1	ΥΦΙΣΤΑΜΕΝΟ Ποιότητα S400s Σταθερές Es (Gpa) 200 Fyd (MPa) 333.3333 γsu 1 γss 1	Υπολογισμός Ελεγχος σε όρους παραμορφώσει ~ Οπτική αναγνώριση ~ Stahl I ~ ΣΑΔ Υλικού Ανεκτή ~ ΣΑΔ Λεπτομερ. Ανεκτή ~ Fym (MPa) s γ's 220 0 1.2	Εργαστηριακές Τιμές Ερήμην Τιμές (ΚΑΝΕΠΕ 2017) Οπτική αναγνώριση Ερήμην Τιμές (ΚΑΝΕΠΕ 2022) Εργαστηριακές Τιμές (ΚΑΝΕΠΕ 2022) Stahl I Stahl III Stahl IV S220 S400 S500 B500
Μαχ Παραμόρφωση εs 0.02 ΟΚ	Μαχ Παρομόρφωση εs 0.02 Εφαρμογή σε όλες τις κατηγορίες τ	Fyk (MPa) Fyd (MPa) 220 183.3333 Еvημέρωση ων στοιχείων Cancel	

When determining the strengths of Steel (main & fasteners) there is the additional presence of **Optical Recognition**.

Selecting Visual Recognition opens the list of steel grades that you select

Stahl I	\sim	
Stahl I		Stahl III
Stahl III		
Stahl IV		Ανεκτή
S220		
S400		Fym (MPa)
S500		
B500	and autom	natically fills Fym .

All other values are automatically filled in and with the **Update** the Constants for the Existing Steel (main & fasteners) are calculated.

3^h revision of the EIA CIP

For steel, the material safety factor γ s now depends not only on the material data reliability level but also on the detail data reliability level. These two new options have therefore been introduced:

ΣΑΔ Υλικού	Ανεκτή	~
ΣΑΔ Λεπτομερ.	Ανεκτή	\sim

The option Laboratory Values CANEPE 2022 was also introduced, where the cs is derived from a combination of the two SDSs and the option Absent Values CANEPE 2022 was also introduced where the requirement for steel is that the material SDS is satisfactory (rather than tolerable which was in the previous revision).

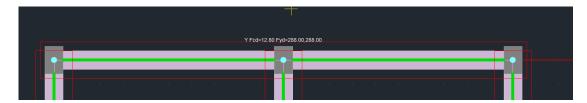
Then and before the initial sizing, as in the new building, the corresponding option in the parameters must be "Existing". Then and as usual you adjust the reinforcements of the structural elements.

IKOVOT	ικός Κόμβων			Σιδηρώ\	/			Eŭ	ύλινα	
Συνδυασμοί	Πλάκα	ες	Δοκοί	Στύ	λοι	Πέč	διλα		On/	ισμο
ονδυασμοί Σετ	Φορτίσεων	(101	.) Aσт.	Λεπ.	+X	X	+	Z	Z	No
Συνδυασμοί								∧/A	Κατά	^
1(5) +1.35Lc1	+1.50Lc2							Α		
2(1) +1.00Lc1	+0.50Lc2							Α		
3(2) +1.00Lc1								Α	+X	
4(2) +1.00Lc1								A	+X	
5(2) +1.00Lc1 6(2) +1.00Lc1								A	+X +X	
7(2) +1.00Lc1								A	+X	
								A	+X	
8(2) +1.00Lc1 9(2) +1.00Lc1	+0.30Lc2+1	.00Lc3+0.	30Lc41.0	0Lc5+0.3	30Lc60	.30Lc7		A A	+X +X	
8(2) +1.00Lc1	+0.30Lc2+1	.00Lc3+0. .00Lc3+0.	30Lc41.0 30Lc41.0	0Lc5+0.3 0Lc50.3	30Lc60 30Lc6+0	.30Lc7 .30Lc7			+X +X	~
8(2) +1.00Lc1 9(2) +1.00Lc1 10(2) +1.00Lc	+0.30Lc2+1 +0.30Lc2+1 1+0.30Lc2+	.00Lc3+0. .00Lc3+0. 1.00Lc3+0	30Lc41.0 30Lc41.0	0Lc5+0.3 0Lc50.3	30Lc60 30Lc6+0	.30Lc7 .30Lc7		A	+X +X	×
8(2) +1.00Lc1 9(2) +1.00Lc1 10(2) +1.00Lc 4 ευντελεστές Στ	+0.30Lc2+1 +0.30Lc2+1 1+0.30Lc2+	.00Lc3+0. .00Lc3+0. 1.00Lc3+0	30Lc41.0 30Lc41.0).30Lc41.	0Lc5+0.3 0Lc50.3	30Lc60 30Lc6+0 .30Lc6	.30Lc7 .30Lc7	7	A	+X +X	~
8(2) +1.00Lc1 9(2) +1.00Lc1 10(2) +1.00Lc «	+0.30Lc2+1. +0.30Lc2+1. 1+0.30Lc2+ 1+0.30Lc2+	.00Lc3+0. .00Lc3+0. 1.00Lc3+0	30Lc41.0 30Lc41.0 .30Lc41. / (1- 0)	0Lc5+0.3 0Lc50.3	30Lc60 30Lc6+0 .30Lc6 Ею	.30Lc7 .30Lc7 0.30Lc	7 Συνζ	Α Α Α	+X +X 2	~
8(2) +1.00Lc1 9(2) +1.00Lc1 10(2) +1.00Lc < cuvτελεστές Στ Στάθμη	+0.30Lc2+1 +0.30Lc2+1 1+0.30Lc2+1 άθμης Χ	00Lc3+0. 00Lc3+0. 1.00Lc3+0 1 Y	30Lc41.0 30Lc41.0 .30Lc41. / (1-0) Z	0Lc5+0.3 0Lc50.3	30Lc60 30Lc6+0 .30Lc6 Ею	.30Lc7 .30Lc7 0.30Lc3	7 Συνζ	Α Α Α	+X +X 2	~
8(2) +1.00Lc1 9(2) +1.00Lc1 10(2) +1.00Lc < cuvτελεστές Στ Στάθμη 0 - 0.00	+0.30Lc2+1 +0.30Lc2+1 :1+0.30Lc2+1 άθμης X 1.000	00Lc3+0. 00Lc3+0. 1.00Lc3+0 1 Y 3.000	30Lc41.0 30Lc41.0 .30Lc41. / (1-0) Z 3.000	0Lc5+0.3 0Lc50.3	30Lc60 30Lc6+0 .30Lc6 .30Lc6 Εισ Υπολ	.30Lc7 .30Lc7 0.30Lc2 0.30Lc2 αγωγή ωγισμό	7 Συνδ ς Συι	Α Α Δ δυασμ	+X +X 	× ×
8(2) +1.00Lc1 9(2) +1.00Lc1 10(2) +1.00Lc < τουντελεστές Στ Στάθμη 0 - 0.00 1 - 300.00	+0.30Lc2+1 +0.30Lc2+1 :1+0.30Lc2+ άθμης X 1.000 3.000	00Lc3+0. 00Lc3+0. 1.00Lc3+0 1 Y 3.000 3.000	30Lc41.0 30Lc41.0 .30Lc41. / (1-θ) Z 3.000 3.000	0Lc5+0.3 0Lc50.3 00Lc50.	30Lc60 30Lc6+0 .30Lc6 Εισ Υπολ Συνδυα	. 30Lc7 . 30Lc7 0. 30Lc3 αγωγή ιογισμό ισμός G	7 Συνζ ς Συτ +ψ2	Α Α δυασμ νδυασ	+X +X +X 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	
8(2) +1.00Lc1 9(2) +1.00Lc1 10(2) +1.00Lc < Στάθμη 0 - 0.00 1 - 300.00 2 - 600.00	+0.30Lc2+1 +0.30Lc2+1 1+0.30Lc2+1 άθμης X 1.000 3.000 3.000	00Lc3+0. 00Lc3+0. 1.00Lc3+0 1 Y 3.000 3.000 3.000	30Lc41.0 30Lc41.0 .30Lc41. / (1-0) Z 3.000 3.000 3.000	0Lc5+0.3 0Lc50.3 00Lc50.	30Lc60 30Lc6+0 .30Lc6 .30Lc6 Εισ Υπολ	. 30Lc7 . 30Lc7 0. 30Lc3 αγωγή ιογισμό ισμός G	7 Συνζ ς Συτ +ψ2	Α Α δυασμ νδυασ	+X +X +X 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	
8(2) +1.00Lc1 9(2) +1.00Lc1 10(2) +1.00Lc τοτελεστές Στ Στάθμη 0 - 0.00 1 - 300.00 2 - 600.00 3 - 900.00	+0.30Lc2+1 +0.30Lc2+1 1+0.30Lc2+1 1+0.30Lc2+1 1.000 3.000 3.000 3.000 3.000	00Lc3+0. 00Lc3+0. 1.00Lc3+0 1.00Lc3+0 1 Y 3.000 3.000 3.000 3.000	30Lc41.0 30Lc41.0 .30Lc41.0 / (1-0) Z 3.000 3.000 3.000 3.000	0Lc5+0.3 00Lc50.3 00Lc50	30Lc60 30Lc6+0 .30Lc6 Εισ Υπολ Συνδυα	0.30Lc7 0.30Lc7 0.30Lc3 0.30Lc3 0.30Lc3 0.30Lc3 0.30Lc3 0.30Lc3 0.30Lc3 0.30Lc3 0.30Lc3 0.30Lc3 0.30Lc3 0.30Lc7 0.30Lc7 0.30Lc7 0.30Lc7	7 Συνά ς Συν +ψ2 σιολ	Α Α δυασμ νδυασ νδυασ	+X +X +X 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	 Γης
8(2) +1.00Lc1 9(2) +1.00Lc1 10(2) +1.00Lc ταάθμη 0 - 0.00 1 - 300.00 2 - 600.00 3 - 900.00 4 - 1200.00	+0.30Lc2+1 +0.30Lc2+1 1+0.30Lc2+1 1+0.30Lc2+1 1.1+0.30Lc2+1 1.000 3.000 3.000 3.000 3.000 3.000 3.000	00Lc3+0. 00Lc3+0. 1.00Lc3+0 1 V 3.000 3.000 3.000 3.000 3.000	30Lc41.0 30Lc41.0 .30Lc41.0 .30Lc41. / (1-0) Z 3.000 3.000 3.000 3.000 3.000	0Lc5+0.3 0Lc50.3 00Lc50	30Lc60 30Lc6+0 .30Lc6 .30Lc6 Εισ Υπολ Συνδυα υτόματη	. 30Lc7 . 30Lc7 0. 30Lc2 αγωγή αγογρογρογογρογρογρογρογορογρογορογορογρογ	7 Συνζ ς Συν +ψ2 σιολ ς μεγ	Α Α Α δυασμ νδυασ νδυασ νδυασ νδυασ	+X +X +X 2 ών μών 101 1 Μελέτ ΚΑΝ.Ε	 της ΞΠΕ.

With the command "Category - Beam Material" and "Category - Column Material" you can display the categorization of the elements and the strengths of the materials in your organisation.



For example, in the following beam spacing



there is the designation (Y), Existing material and the corresponding three characteristic strengths of concrete, main reinforcing steel and steel fasteners.

3. Existing construction and addition of new construction

The procedure followed here is a "mixture" of the first two previously mentioned. You define the two materials (New and Existing) and then do selective sizing in two phases:

- You define the Existing as the active sizing material and selectively size only the Existing elements and then
- You define New as the active dimensioning material and dimension the New.

OBSERVATION:

If you want to change the category of an item from New to Existing, you simply dimension it selectively with the corresponding material active.

Ταράμετροι Σκυροδέματος			2
NEO	ΥΦΙΣΤΑΜΕΝΟ		
Ποιότητα C20/25 🗸	Ποιότητα C20/25 🗸	Υπολογισμός	
Σταθερές	Σταθερές	Έλεγχος σε όρους παραμορφώσει 🗸	
Fck (MPa) 20	Fcd (MPa) 16.66666	Εργαστηριακές Τιμές 🗸 🗸 🗸	
γcu 1.5	уси 1	Πριν από το 1954 🛛 🗸	
γся 1	VCS 1	ΣΑΔ Υλικού Ανεκτή 🗸 🗸	
Fctm (MPa) 2.2	Fctm (MPa) 2.210418	Fcm (MPa) s (MPa) γ'c	
TRd (MPa) 0.25		20 4 1.2	
TRd (MPa) 0.25	TRd (MPa) 0.25	Fck (MPa) Fcd (MPa) Fctm (MPa)	
Max Παραμορφώσεις	Max Παραμορφώσεις	20 16.66666 2.210418	
εc (N,M) 0.0035	εc (N,M) 0.0035		
ες (Ν) 0.002	εc (N) 0.002	Ενημέρωση	
ΟΚ Εα	ραρμογή σε όλες τις κατηγορίες των	στοιχείων Cancel	-

Finally, by selecting the "Apply to all categories of items" button,

the materials you specify for one category of building elements (e.g. Pillars) are automatically copied to all other categories of building elements and so you do not need to specify them again, provided of course that the qualities are the same.

This feature applies to both new and existing hardware.

1.3.1.6 Corrosion

It is now possible to calculate the influence of reinforcement corrosion on the mechanical characteristics of structural elements (see EPC Annex 7F) by entering the initial and measured diameter. The program automatically calculates the corrosion rate Xcor, the corresponding degradation factors rcor and all the corresponding degraded quantities (resistances and deformations) according to the type of analysis.

An important modification introduced by the 3rd revision of CEE is the reduction factors for the mechanical characteristics of structural elements with corroded reinforcement rcor

In , Annex 7F proposes indicative values of the softening factor in relation to the corrosion rate Xcor, calculated from the following relationship $\frac{1}{2} = \frac{1}{2} D^2 = D^2$

$$X_{cor} = \frac{\Delta A}{A_s} = \frac{A - A}{A_s} = \frac{D^2 - D^2}{D_s^2}$$

Where Ds : initial, nominal diameter of the reinforcement Ds,cor : measured diameter of corroded reinforcement

The deterioration factors shall be calculated as follows:

CAMPSY

• The reduction factor, $r_{cor,Fy}$, of the resistance moment $F_{y,cor}$, of the structural element where corroded reinforcement occurs relative to the resistance moment of the element without corroded reinforcement, F_y , is defined as:

$$_{rcor,Fy} = \frac{Fy,cor}{F_y} = 1,00-1,30$$

(F.2)

(F.3)

• The reduction factor, $r_{cor, \vartheta y}$, of the yielding strain, $artheta_{y, cor}$, of

of a structural element where corroded reinforcement occurs with respect to the deflection at yield of the element without reinforcement corrosion, ϑ_{y} , is defined as:

$$rcor, \vartheta y = \frac{\vartheta y cor}{\vartheta} = 1,00$$

In practice, it is assumed that the deformation in the leakage remains constant regardless of the degree of corrosion.

• The reduction factor, $r_{cor, \vartheta u}$, of the strain at failure, $\vartheta_{u, cor}$, of of a structural element where corroded reinforcement occurs relative to the deformation at failure of the element without reinforcement corrosion depends on the magnitude of the axial force, v, that stresses it and is defined as:

$${}_{rcor,\theta u} = \frac{\theta u.cor}{\vartheta_{u}} = 1, 00- for \ v \le 0, 20$$
(F.4.a)
$${}_{rcor,\theta u} = \frac{\theta u.cor}{\vartheta_{u}} = 1, 00- 3, for \ 0, 20 < v \le 0, 40$$
(F.4.b)

For v > 0, 40 not enough evidence from the literature has been evaluated. It is reasonable,

however, to

it could be assumed that the values of $r_{cor, \vartheta u}$ would be smaller than those obtained from relation F.4.(b) above.

Note that, in each case, $\vartheta_{u,cor}$ will be taken to be greater than or equal to ϑ_{v} .

ADVERTISEMENT

For the shear strength of structural elements, the provisions of Annex 7C of the Regulation apply, where the shear resistance due to the contribution of fasteners (V_w) is calculated on the basis of their corrosion-reduced cross-section divided by a safety factor of 1,50. For degrees of corrosion of the fasteners greater 35 %, the following shall apply

obtain $V_w = 0$.

In the program, the above procedure is carried out automatically by entering the reinforcement details of the beams and columns (see fig. Use CHAPTER A:

'DOG ARMS' and Chapter B: 'STOCK ARMS')

the initial and the measured diameter and the program will automatically calculate the corrosion rate Xcor, the corresponding degradation factors rcor and all the corresponding take-off values (resistances and deformations) depending on the type of analysis.

1.3.2 Plates

	Ικανοτικά	_	υν άκες			Σιδηρών				ύλινα
Συνδυα	וסקסנ		икац	Δo	K0I	Στύλ	0	Πέδι/	\a	Οπλισμα
Σκυρό	δεμα : C1	2/15	X	άλυβας	(Κύριος)	:S220	X	άλυβας	(Συνδ/	ρων) :S220
Ελεγχο Συνδυα	ι ισμός Φοι	ρτίσεων	Επίλυσηα	ς Τομών		1 ~	A ~	Прос	σθήκη	Διαγραφή
LC	LG1	LG2	LG3	LG4	LG5	LG6	LG7	LG8	LG9	PL
LC1	1.35									0
LC2	1.50									1
Λειτα	μηση Ελεγχος ουργικότη Ρηγμάτω		Εύρ	ος Ρωγμ	ής (mm)	0.3	3]		
	Βέλη Κάμ	ψης	[]/a] a		25	0]		
	ακα Διαγι	ραμμάτα	ov 1 m =	5		(kn / kn	lm)			
Кλіµ										
Кλіµ										

In the field

LC	LG1	LG2	LG3	LG4	LG5	LG6	LG7	LG8	LG9	PL
LC1	1.35									0
LC2	1.50									1

The coefficients for the permanent and mobile loads, which will be taken into account in the solution of the <u>plate sections</u>, are displayed and can be modified by the user.

- The PL column concerns the **Adverse** Plate **Loadings**. A factor of 0 means that the loading loads of the corresponding line will not be included, 1 means that they will be included.
- Select the checks that you wish to be carried out on plates (check the corresponding checkboxes).
- Set the crack width for the cracking test and the scale for displaying the diagrams.

1.3.2.1 Sizing of the plates with input by the designer of more than one combination.

The new version of SCADA Pro has added the possibility of entering more than one combination for the sizing of plates.

In the dimensioning configuration window and specifically in the Plates:

1	Ικανοτικά	ός Κόμβι	ωv			Σιδη	νώα				Ξ	ύλινα
Συνδυα	ισμοί	Πλ	άκες	Δor	coi		Στύ/	10		Πέδι/	\a	Οπλισμοί
Σκυρό	δεμα : C2	20/25	Х	άλυβας (Κύριος):S40	0s	1	Xà	ιλυβας	(Συνδ/	ρων) :S400s
Ελεγχοι Συνδυα		ρτίσεων	Επίλυση	ς Τομών		1	~	A	~	Прос	σθήκη	Διαγραφή
LC LC1 LC2	LG1 1.35 1.50	LG2	LG3	LG4	LG5	LG	6	LG7		LG8	LG9	PL 0 1
Λειτο Ι	ιηση Ελεγχος υργικότη Ρηγμάτωι Βέλη Κάμ	ση	50 2000	οος Ρωγμ a] a	ής (mm)	0.	3				
Кλίμ	ακα Διαγι	ραμμάτι	ov 1 m =	5		(kN	/ kħ	lm)				

G8 LG9 PL
0
1
63

The mask is opened in the same way for all scenarios except that, for the Greek regulations scenario only one combination of failure is predefined, and for the other scenarios one more combination of functionality has been added.

OBSERVATION:

For the Greek regulation (EKOS) the combination of Functionality is not meaningful because the deformation control is based on the dimensions and the type of support of the plates, a process that is done in the pre-estimation of the minimum thickness and has nothing to do with the dimensioning.

To create a new combination, we press the "Add" button. The number becomes 3 and the load factors become 0.

LC	LG1	LG2	LG3	LG4	LG5	LG6	LG7	LG8	LG9	PL
LC1	0.00									0
LC2	0.00									1
				6						

Now we can set the coefficients and whether the combination will be Failure or Functionality.

In the same way we can define as many new combinations as we want or modify those already created. The Program will dimension with the worst moment with respect to the failure combinations and with the corresponding sizes will do the deformation checks from the functionality combinations. We can also use the "Delete" button to delete the combination or combinations we have created. Only the 1 & 2 predefined combinations are not deleted.

1.3.3 Beams

αάμετροι Δομικών Στοιγείων	Κ Παράμετροι Δομικών Στοιχείων
, the for polynomial for the former of the f	< Παραμετροι Δομικών 2τοιχειών
Ικανοτικός Κόμβων Σιδηρών Ξύλινα	Ικανοτικός Κόμβων Σιδηρών Ξύλινα
Συνδυασμοί Πλάκες Δοκοί Στύλοι Πέδιλα Οπλισμοί	Συνδυασμοί Πλάκες Δοκοί Στύλοι Πέδιλα Οπλισμοί
Σκυρόδεμα : C25/30 Χάλυβας (Κύριος) :B500C Χάλυβας (Συνδ/ρων) :B500C	Σκυρόδεμα : C25/30 Χάλυβας (Κύριος) :B500C Χάλυβας (Συνδ/ρων) :B500C
Ελεγχοι	Ελεγχοι
Κάμψη	Κάμψη
Συμμετοχή Αξονικής Δύναμης Ελάχιστος οπλισμός pmin(%) 0	Συμμετοχή Αξονικής Δύναμης Ελάχιστος οπλισμός pmin(%) 0
Διότμηση	Διότμηση
Μέθοδος Γενική 🗸 Εξάντληση Συνδετήρων 🗸	Γωνία Συνδ. a = 90 🗸
Ικανοτική Μεγένθυνση	Ικανοτική Μεγένθυνση
Προσαύξηση Τέμνουσας qχ 3.5 qz 3.5	Προσαύξηση Τέμνουσας
Στρέψη	Στρέψη
🗹 Ελεγχος 🗹 Προέλεγχος	Ελεγχος
Λειτουργικότητα	Λειτουργικότητα
Ρηγμάτωση Εύρος Ρωγμής (mm) 0.3	☑ Ρηγμάτωση Εύρος Ρωγμής (mm) 0.3 k1 0.8 k2 0.5
Βέλη Κάμψης [//a] a= 250 0	Bέλη Κόμψης [/]a] a= 250 0 k3 3.4 k4 0.425 kt 0.4
Αστοχία Εδάφους (Πεδιλοδοκοί)	Αστοχία Εδάφους (Πεδιλοδοκοί)
Ελεγχος Δεδομένα σεπ. 0 σθρ. 0 (kN/M2)	Ελεγχος Δεδομένα σεπ. 0 σθρ. 0 ((dv/M2)
Παράμετροι υπολογισμού ροπών αντοχής	Παράμετροι υπολογισμού ροπών αντοχής
Να ληφθεί υπόψη ο οπλισμός των παρειών	Να ληφθεί υπόψη ο οπλισμός των παρειών
Να ληφθεί υπόψη ο Λοιπός Πρόσθετος Οπλισμός. (Έχει τοποθετηθεί αλλά δεν εμφανίζεται γραφικά στην τομή)	Να ληφθεί υπόψη ο Λοιπός Πρόσθετος Οπλισμός. (Έχει τοποθετηθεί αλλά δεν εμφανίζεται γραφικά στην τομή)
Καταχώρηση Διάβασμα ΟΚ Cancel	Καταχώρηση Διάβασμα ΟΚ Cance

In the **Beams** field, select the checks you wish to perform on the beams (check the corresponding checkboxes):

1.3.3.1 Bend

<u>For the check in "Bending</u>" decide on "Axial Force Involvement" by checking or unchecking the corresponding option.

	•	_
Ελάχιστος οπλισμός pmin(%)	0	

enables the designer to set his own price

for the minimum reinforcement percentage.

• If a value is given then the program will take it into account for the minimum reinforcement, and if the field is left blank, the program takes into account the value of Regulation.

1.3.3.2 Shear

For the control in "Shear" decide:

• (EAK) you specify the method by which the Shear will be calculated. It is possible to calculate the shear either by the general method (paragraph 11.2 of

E.K.O.S.) or by the alternative method (paragraph 11.2.5 of E.K.O.S.), as well as the possibility to receive the cutting force either by fasteners or by placing additional longitudinal reinforcement.

	Διάτμηση Μέθοδος	Γενική	 Εξάντληση 	Συνδετήρων	•		
1	(FC) the	Γενική Εναλλακτική angle of inst	allation of t	Συνδετήρων Πρόσθ.Διαμήκη	S. A án na		
•				ine rastener.	Γωνία Συνδ.	a = 90 a = 45 a = 90	-

1.3.3.3 Economic growth

In the field "<u>Iconic Magnification</u>" check the checkbox satisfactory check is required:

• (EAK) If you select the increase of the intersection, you have the option to set different seismic behaviour coefficient q per direction (qx and qz).

• (EC8 §5.4.2.2.2.) structures with DCM and DCH require "Capacity Design" The value of $_{\gamma RD}$ for overstrength is automatically set as a function of ductility: $_{\gamma RD=1,0}$ for DCM / $_{\gamma RD=1,2}$ for DCH.

1.3.3.4 Cranking

For the control in "Rotate" check the checkbox:

(EAK) "Control" and "Pre-Control".
 When you have only the "Control" option enabled, the contribution of the concrete, i.e. vcd = 0 (i.e., it is assumed that the shear stress received by the concrete is zero) and then the calculation of the connectors is performed.

ATTENTION:

If both the "Check" and "Pre-check" options are enabled, the program checks if a "Torsion Check" is required.

- If a check is required, set vcd= 0 when calculating the shear connectors.
- If no check is required, the program determines the value of v_{cd} and then calculates the connectors.
 - Activating only the "Pre-check" option without simultaneously activating of the "Rotate" option is meaningless.
 - (EC) "Check" The program considers Vcd= 0 and calculates the clips.

The next section concerns the checks in the limit state of functionality, OKL, you specify whether you want to check for cracking by ticking or not the corresponding option, as well as the minimum crack width by entering its value in the box next to the indication "Crack width (mm)". The program shall take as default value a crack width equal to 0,3 mm, as specified in the relevant chapter of the Eurocode.

1.3.3.5 Functionality

For the OKL, activate the controls "Expansion" and

• (EAK) possibly modify the crack width (EC)

🔽 Προσαύξηση Τέμνουσας if a

• (EC2) modify, if necessary, the constants K*

*EC2§7.3.4

K1 : is a coefficient to take into account the congruence properties of the reinforcement with congruence:

K1=0,8 for high affinity bars
K1=1,6 for bars with a practically smooth surface
K2 : is a coefficient to take account of the distribution of deformations K2=0,5 for bending
K2=1,0 for net tensile strength
K3=3,4
K4=0,425

The control of "Bending Needles" in the beams according to EC2 is done by selecting the corresponding control in the beam sizing parameters.

11000011100	ς Κόμβων		Σιδηρών		Ξύλινα
Συνδυασμοί	Πλάκες	Δοκοί	Στύλοι	Πέδιλα	Οπλισμοί
Σκυρόδεμα : C20	0/25 Xà	ιλυβας (Κύριος)	:B500C	Χάλυβας (Συν	νδ/ρων) :B5000
Ελεγχοι					
Κάμψη					
Συμμετοχή	ή Αξονικής Δύνα	ιμης	Ελάχιστος ο	πλισμός pmin(%)) 0
Διάτμηση					
Γωνία Συνδ.	a = 90	~			
Ικανοτική Μ	Ιεγένθυνση	1			
and the second s	ξηση Τέμνουσαα				
	41-12-1-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2-	2			
Στρέψη					
Ελεγχος					
_ Λειτουργικότητ	ra				
Ρηγμάτωση	Εύρος	Ρωγμής (mm)	0.3	k1 0.8	k2 0.5
🗹 Βέλη Κάμψη	15 [l/a] a	= 250 0	k3 3.4	k4 0.425	kt 0.4
E bern Roport	is [i/a] a				NC Str
Αστοχία Εδάφο	ους (Πεδιλοδοκο	i)			
Ελεγχος	Δεδομένα	σεη.	0	σθρ. 0	(kN/M2)
					- 102 102 100

This is where the upper limit (I/a) of the deformations is determined.

The results of the check are displayed at the end of the investigation file

ΕΛΕΓΧ	ΟΣ ΠΑΡΑΜΟΡΦ	ΟΣΕΩΝ				
δοκός	1 5 b=0.25	h=0.50 c=0	.03			
Συνδ.	м	N	Du1	Du2		
100	-21.356	-0.000	0.00443	0.00011	0.00454	0.01500
101	-20.315	-0.000	0.00432	0.00012	0.00443	0.01500
102	-23.958	-0.000	0.00471	0.00010	0.00481	0.01500

EXAMPLE:

The above beam is checked for the 3 combinations of functionality (100, 101, 102) and the value Du1 is the maximum deformation of the element as obtained from the calculation of its elastic line.

The magnitude Du2 is the deformation as calculated based on relation 7.18 of EC2. The sum (Du1+Du2) is then calculated and entered and in the fourth column is the upper limit l/a. It must be (Du1+Du2) < l/a, so that there is no problem.

1.3.3.6 Pedestals

Activate "Check", which concerns the calculation of the limit load of the footings of a foundation, to activate the "Data" command, which is <u>only</u> filled in <u>if you have a soil engineering study</u>, and not arbitrarily.

Αστοχία Εδάφους (Terzagh	ii) 🔀
Γωνία εσωτερικής Τριβής φ	25
Συνοχή εδαφ. C (kN/m2)	6
Ειδκό βάρος εδάφους	(kN/m3)
Υπερ της βάσης πεδ/κου	20
Υπό της βάσης πεδ/κου	20
Ειδ.Βάρος νερού (kN/m3)	10
Βάθος Θεμελίωσης (m)	3
Βάθος Υδρ.Ορίζοντα (m)	3
Συντελεστής Ασφαλείας	3
ОК	Cancel

Φέρουσα Ικανότητα Εδάφους (ΕC7)

0

0

0

Cancel

Μέθοδος Υπολογισμού

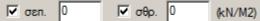
Γωνία Εσωτερικής Τριβής φ

Συνοχή Εδάφους C (kN/m2) Αστράγγιστες Συνθήκει Διατμ.Αντοχή Su (kN/m2)

OK

The calculation of the limiting load of the Pedestal is performed according to the general Terzaghi formula divided by the safety factor of the Pedestal parameter table which is recommended to be not less than 3.

The calculation of the limiting load of the Pedestal is performed according to the selected Calculation Method according to EC7.



two options concerning the designer's

determination of the allowable soil stress. Select with the mouse the corresponding option \mathbb{M} next to "Shep (KN/m2)" and in the adjacent box type the value of the allowable stress that we

want the program to take into account. Then select with the mouse the corresponding option mext to "shtr (KN/m2)" and in the adjacent box type the value of the fracture stress that we want the program to take into account.

OBSERVATIONS:

The above parameters in the "Soil failure" section refer to the strength of the soil for footing with footings and the calculation is done either with Terzaghi/EC method, or by entering the allowable stress and the fracture stress in the corresponding fields.

The soil bearing capacity check based on EC7 for the footings is shown in the results in the following format:

|-----ΕΛΕΓΧΟΣ ΦΕΡΟΥΣΑΣ ΙΚΑΝΟΤΗΤΑΣ ΕΔΑΦΟΥΣ (ΕC7)------| |Μέθ.Υπολογισμού : ΙΙ Γωνια εσωτερ.τριβης φ= 4.00 Αστράγγιστες Συνθήκες:Ναι| |Συνοχή Εδάφους C(kN/m2)=12.0 Διατμητική Αντοχή Su(KN/m2) = 20 | |Λόγος Επάρκειας λgo = 0.69 |

Also shown in the exploration are the detailed test results for each combination

ΕΛΕΓΧΟΣ ΦΕΡΩΥΣΑΣ ΙΚΑΝΟΤΗΤΑΣ ΕΔΑΦΟΥΣ (EC7)

TOKOZ I HI T							
1 N= -74.76 My=	0.00 Mz=	44.88 Vy=	0.00 Vz=	0.00 qEd= -77.83	2 qRd= 111.99 HEd=	0.00 Rd=	10.49 1=0.69
2 N= -48.13 My=	0.00 Mz=	28.79 Vy=	0.00 Vz=	0.00 qEd= -53.5	7 qRd= 111.73 HEd=	0.00 Rd=	10.57 1=0.48
3 N= -9.09 My=	0.00 Mz=	44.52 Vy=	0.00 Vz=	0.00 qEd= -47.5	2 qRd= 104.20 HEd=	0.00 Rd=	34.50 1=0.46
4 N= -13.54 My=	0.00 Mz=	42.33 Vy=	0.00 Vz=	0.00 qEd= -47.7	9 qRd= 104.20 HEd=	0.00 Rd=	34.50 1=0.46
5 N= -8.66 My=	0.00 Mz=	45.02 Vy=	0.00 Vz=	0.00 qEd= -47.4	0 qRd= 104.20 HEd=	0.00 Rd=	34.50 1=0.45
6 N= -13.12 My=	0.00 Mz=	42.84 Vy=	0.00 Vz=	0.00 gEd= -47.6	7 gRd= 104.20 HEd=	0.00 Rd=	34.50 1=0.46

The results show the worst ratio.

1.3.3.7 Parameters for calculating the strength moments of the beams

You can now specify <u>for existing buildings</u>, whether in the calculation of the beam strength moments based on the interaction diagrams, you want to take into account the reinforcement bars of the side walls, as well as any additional reinforcement that exists and which does not appear in the beam cross-section.

ſ	Παράμετροι υπολογισμού ροπών αντοχής
	🗌 Να ληφθεί υπόψη ο οπλισμός των παρειών
	Να ληφθεί υπόψη ο Λοιπός Πρόσθετος Οπλισμός. (Έχει τοποθετηθεί αλλά δεν εμφανίζεται γραφικά στην τομή)
	(-Verice reserves a set effective a librative out to be)

1.3.4 Pillars For EKOS-EAK scenario

Ικανοτικά	ος Κόμβων		Σιδηρών		Ξύλινα	Ικανοτικό	- K40		Σιδηρών		Ξύλινα
Συνδυασμοί	Πλάκες	Δοκοί	Στύλοι	Πέδιλα	Οπλισμοί			Annel	2ισηρων Στύλοι		
Σκυρόδεμα : C30 Ελεγχοι Διάτμηση - Κάμψ Ποοσαύξηση Περίσφηζη - Π	0/37 Χάλ νη θυνση η Ροιής Στύλου η Τέμνουσας Στύλ	υβας (Κύρ Πηρι ου Πηρι	210/04 ος) :B500C οσαύξηση Ροπής Τ οσαύξηση Τέμνους Κρισιμο Μήκος Τ Στόβμη Βάση Τοιχωμάτων Προκαθαρισμ	Χάλυβας (Σι οιχείου ιας Τοιχείου οιχώματος 5 1 - 385.00	μνδ/ρων) :B500C qχ 3.5 qz 3.5		η θυνση Ροπής Στύλου	ο		Τοιχείου ισας Τοιχείου Τοιχώματος Γς 1 - 385.00	Οηλαμοί ιδ/ρων) :B500C
Κοντά Υποστυλ Ελεγχος Στρέψη Ελεγχος	ιώματα Δεδομέν Προέλεγχοσ		Μέθοδος Υπολ	\ογισμού Ράβδα	υV	Στρέψη ΖΕλεγχος				ολογισμού Ράβδω Βου Υποστυλώμα	
Toixeia (Lmax/L			Ελάχιστος οπλισμ	ός pmin(%)	0	Τοιχεία (Lmax/Ln	nin) > 4		Ελέχιστος οπλισ		

The **Columns** field refers to columns and walls. Select the checks you wish to perform (check the corresponding checkboxes).

1.3.4.1 For EKOS-EAK scenario

1.3.4.1.1 Economic Growth

In the field "<u>Capacitive Magnification</u>" the possibility of increasing shear and/or torque during the capacitive check of the nodes is given by selecting next to the corresponding

🗹 Προσαύξηση Ροιηής Στύλου 🛛 Προσαύξηση Ροιηής Τοιχείου

case Προσαύξηση Τέμνουσας Στύλου Προσαύξηση Τέμνουσας Τοιχείου

In the box next to 'qx' and 'qz' the value of the coefficient q is given, which may be varied in each direction and which is the upper limit of the increase in shear or moment.

1.3.4.1.2 Cranking

For the control in "<u>Rotate</u>" check the checkbox:

When you have only the "Check" option enabled, the contribution of the concrete is ignored, i.e. $v_{cd} = 0$ (i.e., it is assumed that the shear stress received by the concrete is zero) and then the calculation of the connectors is performed.

ATTENTION:

If both the "Check" and "Pre-check" options are enabled, the program checks if a "Torsion Check" is required.

For **EUROCODE** scenario

- If a check is required, set v_{cd} = 0 when calculating the shear connectors.

- If no check is required, the program determines the value of $_{Vcd}$ and then calculates the connectors.

• Activating only the "Pre-check" option without simultaneously activating of the "Rotate" option is meaningless.

1.3.4.1.3 Near Pillars

There is also a <u>check for "Close Pillars"</u>. Activate the checkbox in "Check" and enter the parameters for short columns in the data:

	Παράμετροι Κοντών Υποστ	υλωμάτων 🗙
	Λόγος διάτμησης as <=	2.5
	🔲 Υπάρχουν δύσκαμητα πε	τάσματα
	Ανηγμένη Αξονική maxvd	0.4
	Μειωτικός συντελεστής γRd Διατμητικής αντοχής	0.8
	Αυξητικός συντελεστής γd	1.5
	🔲 Υπολογισμός Αρμού	
	Ελεύθερο μήκος Ητ (m)	0
Tł th	ОК	Cancel

The first option relates to the limit of the shear ratio below which a column is considered short. The default value under the Regulation is 2,5.

The next option is whether or not stiff pedestals are present (their existence requires the second condition of paragraph 18.4.9.1 to be satisfied)

The next option is the limit of the reduced axial load. For short poles the default by regulation is 0.40. The next option is the shear strength reduction factor and its default value by regulation is 0.8.

in the calculation of the joint in the case of wall fillings

If you want to calculate a joint, select the check box "Joint calculation"

Finally you set the height of the wall Ht in meters. This height is taken into account in the calculation of the joint.

After you have sized the poles, in the results display the last section is for the previously mentioned checks.

7 4. 10	ΛΕΓΧΟ ιδιάτμησης							
Msd(kNm) Vsd					한다. 영화 이 같은 것 같아. 같은 것 같아. 영화 영화 문화			
말 그 같이 있는 것은 것을 가장에 가장에 들어야 한다. 가장을 가지 않았다.	3.98 0.35	15-5 X1-5-62-68	2 3 - 1 - 2 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	일을 사용을 많이 많이 많을 것을 사망했다. 것을 가지 않는 것을 가지 않는 것을 가지 않는 것을 하는 것을 수가 있다. 말하는 것을 하는 것을 수가 있는 것을 수가 있다. 말하는 것을 수가 있는 것을 수가 있다. 말하는 것을 수가 있는 것을 수가 있다. 말하는 것을 수가 있는 것을 수가 있다. 말하는 것을 수가 있는 것을 수가 있다. 말하는 것을 수가 있는 것을 수가 있다. 말하는 것을 수가 있는 것을 수가 있다. 말하는 것을 수가 있는 것을 수가 있다. 말하는 것을 수가 있는 것을 수가 있다. 말하는 것을 수가 있는 것을 수가 있다. 말하는 것을 수가 있는 것을 수가 있다. 말하는 것을 수가 있는 것을 수가 있다. 말하는 것을 수가 있는 것을 것을 수가 있었다. 말하는 것을 수가 있는 것을 것을 수가 않았다. 것을 것을 것을 수가 있는 것을 수가 않았다. 것을 것을 것을 수가 않았다. 것을 것을 것을 것을 수가 않았다. 것을 것을 것을 수가 않았다. 것을 것을 것 같이 것을 것을 수가 있는 것을 것을 수가 있는 것을 것을 수가 있는 것을 수가 있다. 것을 것 같이 것을 것 같이 것을 것 같이 것 같이 같이 같이 것 같이 않았다. 것 같이 것 같이 것 같이 것 같이 것 같이 것 같이 않았다. 것 것 같이 것 같이 것 같이 것 같이 않았다. 것 같이 것 것 같이 같이 않았다. 것 같이 것 같이 같이 않았다. 것 같이 것 것 같이 같이 않았다. 것 것 것 같이 것 것 같이 않았다. 것 것 같이 것 것 것 같이 않았다. 것 것 것 것 것 같이 않았다. 것 것 것 것 것 같이 않았다. 것 것 것 것 것 것 같이 것	- CHE-44 - COMMUNICATION - COMMUNIC	1964000000000000000000000000000000000000	S-S-62-32 - 25	
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КОРҮФН Ү	20 200 COLUMN 80				/ < -464	.00	20 1	NCCL
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коруфн z упологіхмо:	Σ ΔΙΣΔΙΑΓΩΝ	ΙΟΥ ΟΠΛΙΣ	SMOY Asd	(30% * Συ	νολικού Δια	μήκους	Οπλισμ	10ť)-
ΒΑΣΗ Ζ ΚΟΡΥΦΗ Ζ ΥΠΟΛΟΓΙΣΜΟ! Κατά Υ : Αsdy	$\Sigma \Delta I \Sigma \Delta I A \Gamma \Omega N$ y = 9.59 c	ТОУ ОПЛІΣ m2 (4Φ18	EMOY Asd 3)	(30% * Συ Κατά	νολικού Δια Ζ : Asdz =	αμήκους 9.59 c	Οπλισμ	10ť)-
ΚΟΡΥΦΗ Ζ ΥΠΟΛΟΓΙΣΜΟ: Κατά Υ : Asdy	Σ ΔΙΣΔΙΑΓΩΝ y = 9.59 c ελεγχος	10Υ ΟΠΑΙΣ m2 (4Φ18 ΥΠΕΡΒΑΣΗ	- ΣΜΟΥ Asd 3) ΗΣ ΤΗΣ ΜΕ	(30% * Συ Κατά ΣΤΑΚΙΝΗΣΗΣ	νολικού Δια Ζ : Asdz = ΑΣΤΟΧΙΑΣ δ	αμήκους 9.59 c iu	Οπλισμ m2 (4	ıoú)- ⊧⊕18)
ΚΟΡΥΦΗ Ζ ΥΠΟΛΟΓΙΣΜΟ: Κατά Υ : Αsdy Σταθερές Υλιι	Σ ΔΙΣΔΙΑΓΩΝ y = 9.59 c ΕΛΕΓΧΟΣ κού-Διατομή	ТОҮ ОПАТУ m2 (4Ф18 УПЕРВАУН ç:E(GPa)=	5ΜΟΥ Asd 3) ΗΣ ΤΗΣ ΜΕ =28.00 G((30% * Συ Κατά ΣΤΑΚΙΝΗΣΗΣ	νολικού Δια Ζ : Asdz = ΑΣΤΟΧΙΑΣ δ	αμήκους 9.59 c iu	Οπλισμ m2 (4	ıoú)-∙ ⊧⊕18)
ΚΟΡΥΦΗ Ζ ΥΠΟΛΟΓΙΣΜΟ: Κατά Υ : Asd Σταθερές Υλιι Συντελεστές:	Σ ΔΙΣΔΙΑΓΩΝ y = 9.59 c ΕΛΕΓΧΟΣ κού-Διατομή γθd=1.3 θψ	IOY ОПЛІХ m2 (4Ф18 УПЕРВАХН ç:E(GPa)= =0.008 q=	- ΣΜΟΥ Asd 3) ΗΣ ΤΗΣ ΜΕ =28.00 G(=3.5	(30% * Συ Κατά ΤΑΚΙΝΗΣΗΣ (GPa)=11.6	νολικού Δια Ζ : Asdz = ΑΣΤΟΧΙΑΣ δ 7 Αγ(m2)= 0	αμήκους 9.59 c iu 1.22 Az(Οπλισμ m2 (4	ıoú)- ⊧⊕18)
ΚΟΡΥΦΗ Ζ ΥΠΟΛΟΓΙΣΜΟ Κατά Υ : Asd Σταθερές Υλιπ Συντελεστές: ΣΧΕΤΙΙ	Σ ΔΙΣΔΙΑΓΩΝ y = 9.59 c ελεΓΧΟΣ κού-Διατομή γθd=1.3 θψ κη ΣειΣΜΙΚΗ	IOY ОПЛІΣ m2 (4ф18 УПЕРВАΣН ç:E(GPa)= =0.008 q= МЕТАКІМН	MOY Asd 3) ΗΣ ΤΗΣ ΜΕ =28.00 G(=3.5 ΗΣΗ	(30% * Συ Κατά ΣΤΑΚΙΝΗΣΗΣ (GPa)=11.6 ΜΕ	νολικού Δια Z : Asdz = ASTOXIAΣ δ 7 Ay(m2)= C TAKINHΣΗ AS	αμήκους 9.59 c ou 1.22 Az(TOXIAΣ	Опλισµ m2 (4 m2)= 0	10ý)- ¦⊕18)).22
ΚΟΡΥΦΗ Ζ ΥΠΟΛΟΓΙΣΜΟ Κατά Υ : Asd Σταθερές Υλιπ Συντελεστές: ΣΧΕΤΙ ΘΕΣΗ Msa	Σ ΔΙΣΔΙΑΓΩΝ y = 9.59 α ΕΛΕΓΧΟΣ κού-Διατομή γθd=1.3 θψ KH ΣΕΙΣΜΙΚΗ d(kNm)- V	IOY ONAIS m2 (4048 YHEPBASH ç:E(GPa)= =0.008 q= METAKINH sd(kN)- 8	5MOY Asd 3) 1Σ ΤΗΣ ΜΕ =28.00 G(=3.5 1ΣΗ 5ελ(mm)	(30% * Συ Κατά ΣΤΑΚΙΝΗΣΗΣ (GPa)=11.6 ΜΕ δ(mm) ?	νολικού Δια 2 : Asdz = ΑΣΤΟΧΙΑΣ δ 7 Αγ(m2)= C ΤΑΚΙΝΗΣΗ ΑΣ αs Θρε	αμήκους 9.59 c ju 1.22 Az(TOXIAΣ δu(mm)	Οπλισμ m2 (4 m2)= C Συνδ.	10ý)- ¦⊕18)).22
ΚΟΡΥΦΗ Ζ ΥΠΟΛΟΓΙΣΜΟ: Κατά Υ : Asdy Σταθερές Υλιη Συντελεστές: ΣΧΕΤΙ ΘΕΣΗ Msc ΒΑΣΗ Υ	Σ ΔΙΣΔΙΑΓΩΝ y = 9.59 c ΕΛΕΓΧΟΣ κού-Διατομή γθd=1.3 θψ κΗ ΣΕΙΣΜΙΚΗ d(kNm)- V -1.00 -	IOY ONAIS m2 (4¢18 YHEPBASH ç:E(GPa)= =0.008 q= METAKINH sd(kN)- 8 116.76	5MOY Asd 3) HΣ THΣ ME =28.00 G(=3.5 HΣH 5ελ(mm) 0.00	(30% * Συ Κατά TAKINHΣHΣ (GPa)=11.6 ME δ(mm) ? 0.00 <	νολικού Δια Z : Asdz = ASTOXIAS 8 7 Ay(m2)= C TAKINHSH AS αs Θpe 1.14 0.009	αμήκους 9.59 c iu 1.22 Az(TOXIAS δu(mm) 0.14	ΟΠλισμ m2 (4 m2)= (Συνδ. 13	ιού)- φ18)).22 Ναι
ΚΟΡΥΦΗ Ζ ΥΠΟΛΟΓΙΣΜΟ: Κατά Υ : Αsdy Σταθερές Υλιη Συντελεστές: ΣΧΕΤΙ ΘΕΣΗ Msc ΒΑΣΗ Υ ΚΟΡΥΦΗ Υ	Σ ΔΙΣΔΙΑΓΩΝ y = 9.59 c ΕΛΕΓΧΟΣ κού-Διατομή γθd=1.3 θψ κΗ ΣΕΙΣΜΙΚΗ d(kNm)- V -1.00 - 4.54	IOY ONAIS m2 (4018 YHEPBASH c:E(GPa)= =0.008 q= METAKINH sd(kN)- 8 116.76 -85.41	EMOY Asd 3) HΣ THΣ ME =28.00 G(=3.5 HΣH 5ελ(mm) 0.00 0.00	(30% * Συ Κατά TAKINHΣHΣ (GPa)=11.6 δ(mm) ? 0.00 < 0.00 <	νολικού Δια Z : Asdz = AΣΤΟΧΙΑΣ 8 7 Ay(m2)= C ΤΑΚΙΝΗΣΗ ΑΣ αs Θpe 1.14 0.009 2.01 0.015	αμήκους 9.59 c iu .22 Az(TOXIAΣ δu(mm) 0.14 1.25	ΟΠλισμ m2 (4 m2)= (Συνδ. 13 5	ιού) ⊕18)).22 Ναι Ναι
ΚΟΡΥΦΗ ΖΥΠΟΛΟΓΙΣΜΟ: Κατά Υ : Ασά Σταθερές Υλιι Συντελεστές: ΣΧΕΤΙΦΕΣΗ Μsc ΒΑΣΗ Υ ΚΟΡΥΦΗ Υ	Σ ΔΙΣΔΙΑΓΩΝ y = 9.59 c ΕΛΕΓΧΟΣ κού-Διατομή γθd=1.3 θψ κΗ ΣΕΙΣΜΙΚΗ d(kNm)- V -1.00 - 4.54 	TOY ΟΠΑΙΣ m2 (4Φ18 YΠΕΡΒΑΣΗ C:E(GPa)= =0.008 q= METAKINH sd(kN)- δ 116.76 -85.41	MOY Asd 3) 1Σ THΣ ME =28.00 G(=3.5 1ΣH 5ελ(nm) 0.00 0.00 -	(30% * Συ Κατά ΣΤΑΚΙΝΗΣΗΣ (GPa)=11.6 δ(mm) ? 0.00 < 0.01 < - -	νολικού Δια Z : Asdz = ASTOXIAS δ 7 Ay(m2) = C TAKINHSH AS αs Θpe 1.14 0.009 2.01 0.015 	αμήκους 9.59 c ju 1.22 Az(ΤΟΧΙΑΣ δu(mm) 0.14 1.25 	ΟΠλισμ m2 (4 m2)= (Συνδ. 13 5 	10ύ)- (Φ18)).22 Ναι
<pre><pre><pre><pre><pre><pre><pre><pre></pre></pre></pre></pre></pre></pre></pre></pre>	Σ ΔΙΣΔΙΑΓΩΝ y = 9.59 c ΕΛΕΓΧΟΣ κού-Διατομή γθd=1.3 θψ κΗ ΣΕΙΣΜΙΚΗ d(kNm)- V -1.00 - 4.54 	TOY ΟΠΑΙΣ m2 (4Φ18 YΠΕΡΒΑΣΗ C:E(GPa)= =0.008 q= METAKINH sd(kN)- δ 116.76 -85.41	MOY Asd 3) 1Σ THΣ ME =28.00 G(=3.5 1ΣH 5ελ(nm) 0.00 0.00 -	(30% * Συ Κατά ΣΤΑΚΙΝΗΣΗΣ (GPa)=11.6 δ(mm) ? 0.00 < 0.01 < - -	νολικού Δια Z : Asdz = ASTOXIAS δ 7 Ay(m2) = C TAKINHSH AS αs Θpe 1.14 0.009 2.01 0.015 	αμήκους 9.59 c ju 1.22 Az(ΤΟΧΙΑΣ δu(mm) 0.14 1.25 	ΟΠλισμ m2 (4 m2)= (Συνδ. 13 5 	10ύ)- ⊕18)).22 Ναι Ναι
<pre>{OPYΦH ZYΠΟΛΟΓΙΣΜΟ: {ατά Y : Asd; Sταθερές Yλι; Sυντελεστές:</pre>	Σ ΔΙΣΔΙΑΓΩΝ y = 9.59 c ΕΛΕΓΧΟΣ κού-Διατομή γθd=1.3 θψ κΗ ΣΕΙΣΜΙΚΗ d(kNm)- V -1.00 - 4.54 18.84 -27.12	TOY OΠAIS m2 (4Φ18 YΠΕΡΒΑΣΗ C:E(GPa)= =0.008 q= METAKINH sd(kN)- 6 116.76 -85.41 	MOY Asd 3) 4Σ THΣ ME =28.00 G(=3.5 4ΣH 0.00 0.00 0.00 0.00 0.03 0.05	(30% * Συ Κατά TAKINHΣHΣ (GPa)=11.6 ME δ(mm) ? 0.00 < 0.01 < - - 0.13 < 0.25 <	voλικού Δια Z : Asdz = ASTOXIAS δ 7 Ay(m2) = C TAKINHΣΗ AS αs Θpe 1.14 0.009 2.01 0.015 1.64 0.013 2.36 0.018	 μήκους 9.59 c 1.22 Az(TOXIAS δu(mm) 0.14 1.25 23.69 43.28 	ΟΠλισμ m2 (4 m2)= C Συνδ. 13 5 2 2	10ý)- ¦Φ18)).22 Ναι Ναι Ναι Ναι

• First, the y and z shear ratios (local axes) at the top and base of the column are calculated. If they are greater than 2,5, no further check is required. If less than 2.5 and greater than 1.5 are obtained, no further testing is required.

diagonal reinforcement but either a satisfactory check must be made or the following condition must be satisfied in the results. The existence of rigid castings requires the satisfaction of this condition.

- The calculation of the diagonal reinforcement follows since the shear ratio less than 1.5..
- This is followed by the calculation of the relative seismic displacement δ and the failure displacement δ u and the check δ < δ u. If the inequality is not met, a reduction of the behaviour index q is required.
- Finally, calculate the seismic coefficient of lift-off behaviour q' by y and by z and the proposed joint δτy if selected in the parameters.

1.3.4.1.4 Critical wall length

The critical wall length is defined as follows:

- The level at which the earthquake has been imposed by the analysis is identified (identify it you must select the "checks" command from the analysis).
- With the checkbox Taxwairwov 1-300.00 OP.YT v unchecked, the program will automatically take the earthquake force level as the basis of the walls. With checked the user manually sets this level. Any change made by

analysis, if the user has selected the checkbox, the option will remain unaffected.

With the second checkbox

 Προκαθαρισμένη Τιμή (m) 3 unchecked, the program will set the critical length as the length calculated by the regulation, otherwise the user manually selects the critical length (in m).

1.3.4.2 For EUROCODE scenario

1.3.4.2.1 Economic Growth

In the field "Iconic Zoom" check the checkboxes

Προσαύξηση Ροπής Στύλου Προσαύξηση Ροπής Τοιχείου

🔽 Προσαύξηση Τέμνουσας Στύλου 🛛 Προσαύξηση Τέμνουσας Τοιχείου

The value of yRD for overstrength is automatically set as a function of ductility:

yRD=1,0 for DCM / yRD=1,2 for DCH.

A distinction is made between the poles and the walls. FACTS

The wall moment increment shall always be in accordance with EC8 (§5.4.2.4), as shall the wall shear increment.

PENS

The post shear increment (per §5.4.2.3) always applies, while the torque increment depends on the static system - required in framed & double equivalent to framed. Specifically, you can see if it is required from the table below from the "checks" in the analysis.

Σεισμική Τέμνουσα Τοιχωμάτων § 5.1.2.										
Σεισμική Τέμνουσα Τοιχωμάτων							Στάθμη Αν	ναφοράς	0 0.0	00(m)
α/α	Συνδ	Τέμνουσα Τοιχ.	/Συνολική Τέμν	. = nvx	Ικαν.	Συνδ	Τέμνουσα Τοιχ	/Συνολική Τέμν.	= nvz	Ικαν.
Στάθμης	/μος	Τέμνουσα Τοιχωμάτων	Συνολική Τέμνουσα	nvx	Έλεγ χος	/μος	Τέμνουσα Τοιχωμάτων	Συνολική Τέμνουσα	nvz	Έλε γχος
1 ***	3	0.000	358.834	0.00	NAI	35	0.000	365.217	0.00	NAI
2	3	0.000	175.323	0.00		35	0.000	170.654	0.00	
ΣΗΜΕΙΟΣ	FIΣ·	*** = Στάθμη ελέ	ννου ην από	κανονισ	ιń					

2ταθμη ελεγχου ην απο κανονισμο

Ko	ιθορισμός Συστήματος Κτιρίου	Προσαύξηση Ροπής	(§4.4.2.3)
Διεύθυνση Χ:	Σύστημα Πλαισίων	Διεύθυνση Χ:	NAI
Διεύθυνση Ζ:	Σύστημα Πλαισίων	Διεύθυνση Ζ:	NAI

1.3.4.2.2 Critical wall length

The critical wall length is defined as follows:

- The level at which the earthquake has been imposed by the analysis is identified (identify it you must select the "checks" command from the analysis).
- With the checkbox 1-300.00 OP.YT V unchecked, the program will automatically take the earthquake force level as the basis of the walls. With the the user manually sets this level. Any change made by analysis, if the user has selected the checkbox, the option will remain unaffected.
- unchecked, the program will
- With the second checkbox set the critical length as the length calculated by the regulation, otherwise the user manually selects the critical length (in m).

1.3.4.2.3 Circumference

For the control in "Circumference"

In the new version the part of the tightening parameters has been changed in order to have a uniform logic in these parameters in both regulations (ECE-CEEC and EC).

More specifically, a separation of selection of poles, walls for the control in tensioning was made.

Περίσφιγξη	Παράκαμψη	
🔽 Στύλοι	Κανονισμού α	0
🔽 Τοιχεία	οwd,anaπ.	0

New logic is as follows:

Περίσφιγξη		
	Παράκαμψη	
	Κανονισμού	0
Στύλοι		0
Ο Τοιχεία	🗌 ωwd,anaπ.	0
Περίσφιγξη		
	Παράκαμψη	
-	Κανονισμού	0
Στύλοι		-
Ο Τοιχεία	🗌 ωwd,anaπ.	0

When the option is unchecked on either the poles or the walls, it is not checked in both regulations.

When the selection of poles is checked, for EC8 the check is made only at the level required (for DCM only in the critical area at the foundation foot (ground floor foot)). For DCH it is required and done everywhere at all levels.

ine anywhere because there is nv criterion from analysis

and it is up to the user to decide where to do the check.

Περίσφιγξη	Παράκαμψη	
Στύλοι	Κανονισμού	0
Ο Τοιχεία	🗌 ωwd,anaπ.	0

When the poles have the option AND activated "Bypass Regulation" then the check is done wherever the user chooses regardless of the regulation requirement.

Specifically for EAK-EKOS IT is the option that must be activated when want to selectively tighten the items I want.

-Περίσφιγξη Στύλοι Τοιχεία	Παράκαμψη Κανονισμού Ο ωwd,απαπ.	0
- Περίσφιγξη	Παράκαμψη	

When the selection of walls is checked, then the check is made where required which for both regulations are those walls that are included in the critical length of the building.

Περίσφιγξη	Παράκαμψη	
Στύλοι	Κανονισμού	0
Τοιχεία	🗹 ωwd,anaπ.	0

When in in files AND the option is activated "Bypass Regulation" then the check is done wherever the user chooses regardless of the regulation requirement. The options for pinned values in a and ω wd, require apply as before and are obviously uniform for poles and walls.

κανονιτμου α Ο Στύλοι Ο αΟ Τοιχεία ωwd,anarτ. Ο	Περίσφιγξη	Παράκα Κανονιι	μψη	
🗹 Τοιχεία 🔲 ωwd,anart. 0	🗸 Στύλοι		uhon a	0
	🗹 Τοιχεία		ωwd,anaπ.	0

If the side fields of the efficiency factor 'a' and/or the tightening factor ' ω wd,required' remain zero, the program shall take into account the value of the factor 'a' depending on the arrangement of the fasteners and for ' ω wd,required'. the limit of the regulation. Otherwise, the check shall

take into account the values you type.

Finally, it is recalled that for the columns the bracing is done their critical areas (at their ends) and for the walls along their entire length (within the critical height of the building).

By default in the parameters you will find:

	Τιερισφιγατ Στύλοι Τοιχεία	Κανονισμού		Contai	nment in Pillars and Vessels where required by
		Περίσφιγξη Στύλοι Τοιχεία	Γιαρακαμψη Κανονισμού	а 0 апан. 0	
For EAK-EKOS sce	nario:	- ···			Clamping on Pillars everywhere (user checks

the necessity) and Vessels where required by the regulation.

IMPORTANT CLARIFICATIONS ON THE CIRCUMVENTION:

With regard to the calculation of the wall edge restraint fasteners at their critical height, the procedure based on EC8-1 was incorporated in the latest internal version.

The following applies to the initial dimensioning of the wall:

- It is mandatory to check for tightening at its critical length except in case vd is less than 0.15 (for DCM only) and <u>except in case the result is negative</u>.
- The calculation of the required curvature flexibility mf is done with torque design and a corresponding moment of resistance at the foot of the wall (i.e. where is founded, where it ends). The calculation is done for the maximum ratio of all combinations (as required by the Eurocode). Obviously this ratio corresponds to a combination, but this does not mean that, in order to calculate the final Wwdreq, you should take into account in the calculation formula, the vd corresponding to this axial. So in the program we find the mf based on the maximum ratio and then for the calculation of Wwdreq, we take into account this mf and the worst vd (which may possibly result from another combination).
- The number of connector segments taken into account by the program in the initial test in shear and tension is always n=2 (worst case) for both addresses. In the recheck (see. B.DETAILS OF REINFORCEMENT

STYLES_19) it is possible to take into account the actual segments per direction.

 A key change compared to the calculation of nd in ECOS and EC8-1 is that in EKOS the nd is calculated and relates to the column (axonal reduced to column and area of the column) while in EC8-1 the nd is calculated with the whole axial and the whole cross-section. This also applies to the reduced axial check. It should be noted that with the "whole" axial and area sizes the results are generally more favourable.

EXAMPLE:

Let's look at an example from which we quote from the Investigation in detail the resulting figures.

```
Κολωνάκι Ο (60.000-40.000) - 200.000
N=753.13 Ac=0.80 Ao=0.18 vd=0.28 bo0=0.55 bo1=0.32 Σbi=0.4087 μφ=4.520 pv=0.002 ων=0.128
Wwdreq = 0.24 Wwdcalc=0.26
Τελικοί Συνδετήρες Φ8/0.10
```

In the above text, 200 cm is the total dimension of the wall. Then the axial N which is the total, Ac=2x0.4=0.8 m2 (the total cross-section for the calculation of vd), vd which as we said refers to the whole cross-section and the sizes Ao, bo0, bo1, Σ bi which refer to the column. The quantities ρv and ωv refer to the mechanical percentage of vertical truss reinforcement.

Wwdreq is the size required by equation 5.20 of EC8, while Wwcalc is the realisable size and corresponds to F8/10 (dimensional) and the corresponding volume of the column based on the following formula

 $\mathsf{Wwdcalc} = (V_{\mathsf{s}} / V_{\mathsf{o}}) \cdot (f_{\mathsf{yd}} / f_{\mathsf{cd}})$

As far as the size Vs for the connectors is concerned, the program, always in the <u>initial</u> dimensioning and always for the walls, takes into account the direction perpendicular to the small side of the wall. This is to compensate for the unfavourable effect of the two-part connector, which is taken into account in both directions, whereas in at least one direction a connector with more than two parts is generally obtained. Finally, I emphasize that the segments and Vs only concern Wwdcalc.

About the recheck on restraint within the column details and when the same sizes are calculated. (see B.Pillar fittings_19).

1.3.4.2.4 Twilight

For <u>control in "Bending</u>", activate In the direction in the bend test is to be performed (along the local Y and/or Z axis).

To display the local axes: "Show">>"Switches">>"Local Axes"

1.3.4.2.5 Cranking

For the <u>control in "Rotate</u>" check the checkbox. The program assumes Vcd = 0 and calculates the clips.

Ελάχιστος οπλισμός pmin(%)	0	
----------------------------	---	--

lenables the designer to set his own price

for the minimum reinforcement percentage.

If a value is given then the program will take it into account as the minimum reinforcement, and if the field is left blank, the program will take the regulation value into account.

1.3.4.2.6 Node Control L/S Control

Activate the checkbox in the "<u>Node Control</u>" to perform the check required in the CIP cases *. §5.5.2.3 §5.5.2.3 §5.5.3.3 located within the Column Arming Details.

Editor Υποστυλ	ιωμάτων	- D X
Kipeç Onlia Kipeç Onlia Luvõenjaeç Maypõssara Suvõenjaeç Marakdajan depevinjan depevinjan Depajopajo Elegyjös Kálgöö	Eneckburg 40 mm Yun (m) Tarodet.mgn Juordoezuv H 6 12 X Y XTZ H 12 Avidmuryud Zizyzðiasakó, Avamúryusnoc Rátra Rátra Avidmuryud Zizyzðiasakó, Avamúryusnoc Nátra Mitalasac, Granding Nakasec, (cm) 50 Nátra 100 Eneckburg 100 Eneckburgen (mm) 10 Kikasasc, Szcilioaný, Azermyskepo 1: 20 Avámuryua 1: 50 Orosposito K10 - 6 1000 1/40	Aucúðuran [1] Default Ynorrúkuua Aordo, Aporrapó Aordo, Zafgá hc(m) 50 Oroya A15 bc(m) 40 hrv(cm) 50 hrv(cm) 50 hrv(cm) 50 bw(cm) 30 bw(cm) 30 zwörtipezer Ag orwa 6.03185 Ag orwa 6.03185
Y + 600.00 + MN - Copy Paste OK Cancel	H - Har (cm) 600 /120 EµBoðov (cm^2) 2000.00 / 2000.00 pmax % - cm^2 4.0 - 80.00 pcal: % - cm^2 1.02 - 20.36 Pólj5oi 8 e 18	0 10/(9) As xdrue 8.04247 As xdrue 8.04247 1 2 As xdrue 8.04247 As xdrue 8.04247 Ynoloyoutoc CK Cancel Cancel C

The way to carry out the check is described in detail in the corresponding chapter of the user manual B. PENSION FITTING LEVELS.

5.5.2.3 Κόμβοι δοκών-υποστυλωμάτων

(1)P Η οριζόντια τέμνουσα που δρα στον πυρήνα ενός κόμβου μεταξύ κύριων σεισμικών δοκών και υποστυλωμάτων θα καθορίζεται λαμβάνοντας υπόψη τις δυσμενέστερες συνθήκες σεισμικής δράσης, δηλ. συνθήκες ικανοτικού σχεδιασμού για τις δοκούς που συνδέονται στον κόμβο και συμβατές τιμές των τεμνουσών δυνάμεων στα άλλα συνδεόμενα στοιχεία. (2) Επιτρέπεται να χρησιμοποιούνται απλουστευμένες εκφράσεις για την οριζόντια τέμνουσα δύναμη που δρα στον πυρήνα σκυροδέματος των κόμβων ως εξής:

α) σε εσωτερικούς κόμβους δοκών-υποστυλωμάτων:

$$V_{\rm ibd} = \gamma_{\rm Rd} (A_{\rm s1} + A_{\rm s2}) f_{\rm yd} - V_{\rm C}$$
(5.22)

β) σε εξωτερικούς κόμβους δοκών-υποστυλωμάτων:

$$V_{jhd} = \gamma_{Rd} \cdot A_1 \cdot f_{yd} - V_C \tag{5.23}$$

όπου

- As1 είναι η διατομή του άνω οπλισμού της δοκού
- As2 είναι η διατομή του κάτω οπλισμού της δοκού
- V_C είναι η τέμνουσα δύναμη του υποστυλώματος πάνω από τον κόμβο, από την ανάλυση σε σεισμική κατάσταση σχεδιασμού
- γRd είναι συντελεστής υπεραντοχής λόγω σκλήρυνσης από παραμόρφωση του χάλυβα και δεν πρέπει να είναι μικρότερος από 1,2.

(3) Οι τέμνουσες δυνάμεις που δρουν σε κόμβους θα αντιστοιχούν στην δυσμενέστερη φορά της σεισμικής δράσης που επηρεάζει τις τιμές A_{\$1}, A_{\$2} και V_C που χρησιμοποιούνται στις εκφράσεις (5.22) και (5.23).

5.5.3.3 Beam-subcolumn nodes

 α) Σε εσωτερικούς κόμβους δοκών-υποστυλωμάτων πρέπει να ικανοποιείται η ακόλουθη έκφραση:

$$V_{jbd} \le \eta f_{cd} \sqrt{1 - \frac{\nu_d}{\eta}} b_j h_{jc}$$
(5.33)

όπου

 $\eta = 0,6(1-f_{ck}/250);$

h_{ic} είναι η απόσταση μεταξύ των ακραίων στρώσεων οπλισμού του υποστυλώματος

bj είναι όπως ορίζεται στην έκφραση (5.34);

ν_d είναι η ανηγμένη αξονική δύναμη του υπερκείμενου υποστυλώματος, και

fek Sivetal de MPa.

β) Σε εξωτερικούς κόμβους δοκών-υποστυλωμάτων:

V_{ibd} πρέπει να είναι μικρότερη από το 80% της τιμής που δίνεται από το δεξιό μέρος της έκφρασης (5.33) όπου:

V_{ihd} δίνεται από τις εκφράσεις (5.22) ή (5.23) αντίστοιχα

και το δρων πλάτος κόμβου b_i είναι:

a) $\epsilon \alpha v b_c > b_w$: $b_i = \min \{b_c; (b_w + 0.5 \cdot h_c)\};$ (5.34a)

β) εάν $b_c < b_w$: $b_i = \min \{b_w; (b_c + 0.5 \cdot h_c)\}$ (5.34b)

1.3.5 Sandals

For **EKOS-EAK** scenario

For **EUROCODE** scenario

Παράμετροι Δομικών Στοιχείων	Παράμετροι Δομικών Στοιχείων
Συνδυασμοί Πλάκες Δοκοί Στύλοι Πέδιλα Οπλισμοί Ικανοτικός Κόμβων Σιδηρών Ξύλινα	Συνδυασμοί Πλάκες Δοκοί Στύλοι Πέδιλα Οπλισμοί Ικανοτικός Κόμβων Σιδηρών Ξύλινα
Σκυρόδεμα: C20/25 Χάλυβας (Κύριος):B500C	Σκυρόδεμα : C20/25 Χάλυβας (Κύριος) :B500C
Ελεγχοι Ποιότητα Εδάφους Σεισμικά Ευπαθές αετι (kN/M2) 250	Ελεγχοι Ποιότητα Εδάφους σεπ.(kN/M2) 250
Κάμψη-Διάτμηση-Διάτρηση MV>? <u>1.5</u> x ME qx <u>3.5</u> qz <u>3.5</u> Μέγιστο Η Πεδθων (cm) 0	Κάμψη-Διάτμηση-Διάτρηση MV>? 1.5 xME qx 3.5 qz Μέγιστο Η Πεδθων (cm) 0
Λειτουργικότητα Βλάβη φερόντων στοιχείων δει/l <= 1/ 0	- Λειτουργικότητα Βλάβη φερόντων στοιαείων δει/! <= 1/
OK Cancel	OK Cancel

In the **Fields** field select the checks you wish to carry out (check the corresponding checkboxes) and enter the details of a possible soil engineering study.

1.3.5.1 For EKOS-EAK scenario

The following controls are:

The first section deals with soil quality. <u>Check "Soil Quality"</u> where by activating the checkboxes of the trends you can set your own limit values. The option "Seismically Vulnerable" soil applies if you want to take into account the provisions of par. 5.2.3.2. of the E.A.C. 2000 for seismically sensitive soils.

In the "stop" options. and "shtr." enter the values of permissible stress and breaking stress respectively.

<u>"Soil Failure Check"</u> where by activating the checkboxes of the controls you activate the "Data" button and parameters for checking the bearing capacity of the soil. If you have a soil engineering study, enter the soil data.

Αστοχία Εδάφους (Παράρτημα Ζ - ΕΑΚ)	X	The upper part of the dialogue box
Γωνία Εσωτερικής Τριβής φ	Φέρουσα καν.απο Εμπειρία 💌	refers to the "Limit Load Failure"
Γωνία Τριβής Εδάφους Θεμελ. δ	Διατμ.Αντοχή Su (kN/m2)	check in accordance with Annex G of the ECE 2000.
Συνοχή Εδάφους C (kN/m2) 0	Υπερπίεση Δυ (kN/m2)	First, from the list on the top left,
Ολ. Ειδικό Βάρος Εδάφους (kN/m3)	Ενεργ.Κατ. Τάση σο (kN/m2)	select the method of calculating the limit load, depending on the type of
Ειδικό Βάρος Υδατος γw (kN/m3)	Σεισμική Περιοχή	foundation soil.
Υδραυλική Κλίση j (%)	Ενεργάς Γωνία φε	The key Ειδκό Βάρος Εδάφους (kN/m3)
Ειδκό Βάρος Εδάφους (kN/m3)	Επιτρ.Τάση σεπ. (kN/m2) 250	
Βάθος Θεμελίωσης (m)	Συντελεστής Τριβής η 0.5	is a key for calculating the buoyant (active) specific gravity of the soil if
🔲 Αστοχία σε Ολίσθηση (Vsd<=Rsd+Rpd)		pressed with the left mouse button (Annex G G.1[2]).
🔲 Συμμετοχή Ενεργητικών Ωθήσεων	Κοκκώδη Εδάφη Rsd=N* 🔽 ΟΚ	
Rsd(kN) 0 Γωνί Rpd(kN) 0 Τιμή	ία Τριβής Εδάφους Θεμελ.δd Cancel	
		>? <i>1,5</i> * ME

This parameter refers to the NRC.

When determining the coefficient $_{acd}$, the N.E.A.C. in paragraph 5.2.2 gives the margin for its calculation according to ex.5.2a in case the moment $_{MV}$ (moment resulting from the non-seismic loads of the combination of ex.4.1) is significant compared to $_{ME}$ (seismic moment at the nearest location of possible plastic joint in the superstructure element bearing on the foundation element under consideration). Since the Regulation does not specify the magnitude of the moments beyond which ex.5.2a will apply, this determination is left to the designer's discretion.

If you do not want to take into account, when calculating $_{\alpha cd}$, the most favourable case of eq.5.2a but eq.5.2, we give a sufficiently large value (e.g. 100) as the MV/ME coefficient.

In the box next to the indication "qx" and "qz" the designer enters the value of the seismic behaviour coefficient of the structure per direction as defined in p.2.6 of E.A.K. 2000. The default value of the program is 3,5.

In the <u>"Maximum Pedestal Height (cm)"</u> option and in the adjacent box type the maximum pedestal height. When dimensioning the program performs a perforation check. If the initial pedestal height is not sufficient, by continuous testing the program reaches a height at which all checks are satisfied. In case a pedestal height greater than the maximum set is required, a warning message is issued to the user.

The last section of the pedestals concerns the control of differential settlements.

\ειτουργικότητα	
🔲 Βλάβη φερόντων στοιχείων δαι/Ι <= 1/	0

Check the corresponding option and specify the upper limit of the δ cr/l ratio that the program will take into account for the differential settling check.

1.3.5.2 For EUROCODE scenario

The following controls are: The first section deals with soil quality.

<u>"Soil Quality Control"</u> where by activating the checkboxes of the trends you can set your own limit values. In the options "stop." and "shtr." you enter the values of the allowable stress and fracture stress respectively.

<u>"Soil Failure</u>" check where by activating the checkboxes of the controls you activate the "Data" button

Φέρουσα Ικανότητα Εδάφους	(EC7)	×
Μέθοδος Υπολογισμού	Ш	•
Γωνία Εσωτερικής Τριβής φ	0	
Συνοχή Εδάφους C (kN/m2)	0	
🗹 Αστράγγιστες Συνθήκει		
Διατμ.Αντοχή Su (kN/m2)	0	
OK Car	ncel	

and the parameters for checking the bearing capacity of the soil. If you have a soil engineering study, enter the soil data.

For the <u>checks in "Bending-Shear-Deflection-Deflection"</u>, check the checkbox and enter the limit for the maximum height of the pedestal. During the dimensioning process the program carries out the check without shear. If the initial height of the pedestal does not satisfy the check then the program continues testing until it reaches the height that satisfies the check. If this is greater than the set limit a permanent message appears informing that a finer perimeter is required.

At	Fields	120	type	the	prices	of	coefficients	that
you u	sed in the analysis.	dt 2.5						

<u>For the "Functionality" checks</u> activating the checkbox allows you to enter the limit of the $\delta cr/l$ ratio to be taken into account in the differential settling check.

1.3.6 Armaments

Iκ	ανοτικός Κόμβ	3ων		Σιδηρών		;	Ξύλινα
Συνδυασ	µоі П	λάκες	Δοκοί	Στύλοι	Πέδ	ίλα	Οπλισμοί
Διαθέσιμο Φ(mm)		6,8,10,1	2, 14, 16, 1	8,20,22,25,28	,32,35,	Lma	ax(m) 12
Πλάκες γ	Υποστυλώματα	α - Τοιχώματα	Δοκοί	Συνδετήριοι	Πεδιλοδοκ	κοί Πέδ	διλα

In the first field, "common" for all structural elements, you specify which bar diameters are to be used. From the list you add or remove the one you enter in forming with the help of the keys + and respectively. In the **Lmax** (cm) field enter the maximum length of the rod to be used in the reinforcement of the structural elements.

1.3.6.1 Armaments - Plates

Enter the overlap in mm according to the climatic conditions.

Πλάκες	Υποστυλώμ	ατα - Τοιχώματα	Δοκοί	Συνδετήριοι	Πεδιλοδοκοί	Πέδιλα
Επικάλυ	ιψη Ράβδων	(mm) 20	A	ιοστ.Ράβδων (cm) max 20	min 5
Οπλισμ	ιός Συμπαγώ	ν Πλακών				
		Φ / (cm))		Φ	/ (cm)
Κύριος	Οπλισμός	8 ~ 20	ſ	Ιρόσθετα Στηρ	ξεων 8	~ 20
Οπλισμ	ός Διανομής	8 ~ 25		Οπλσιμός Απόσ	χισης 8	~ 25
Οπλισμ	υός Πλακών 2	Zoellner - Sandwit		τής/ (cm)	(c) = = = = = = = = = = = = = = = = = = =	
		Ανω Πλάκας			Κάτω Πλ	ακας
Κύριος	Οπλισμός	Φ ~	8 /	15 Φ	~ 8	/ 15
		Δοκίδα Ανω	Φma	ax	Δοκίδα Κάτω	Φmax
Κύριος	Οπλισμός	1 Φ 1	2 ~	20 🗸	2 φ 10	~ 20 ~
Συνδε	ετήρες —					
			2	Στήριξη	A	λνοιγμα
min Aı	πόσταση (cm)) <mark>5</mark> ¢	8	~ / 20	Φ 8	~ / 20

- In the field^{Anoστ.Pάβδων} : type in cm the maximum and minimum desired distance of the bars inside the plate.
- In the field "Solid plate armouring": define the main armouring, the additional armouring and the

the separation reinforcement and the distances between them.

- In the field "Zoellner-Sandwitch-Mixed Plate Armouring": you define the main armouring above and below. Similarly for the beams you define the number of bars and the min and max diameter top and bottom.
- In the "Connectors" field: set the minimum distance of the connectors in cm and the diameter/distance to support and opening.

1.3.6.2 Reinforcements - Supports-Walls

Enter the overlap in mm according to the climatic conditions.

In the max field $A_{noot,P\dot{\alpha}\beta\delta\omega\nu}$: enter in cm the maximum desired distance of the bars inside the poles.

In the "Columns-Walls" field : define the maximum and minimum diameter of the main reinforcement in bending to be used in the columns and wall columns.

Ικανοτικ	κός Κόμβων		Σιδηρών		Ξύλινα
Συνδυασμοί	Πλάκες	Δοκοί	Στύλοι	Πέδιλα	Οπλισμοί
Διαθέσιμοι Ράβζ Φ(mm) 0		0,12,14,16,1	8,20,22,25,28	3,32,35,	Lmax(m) 12
Ιλάκες Υποστ	υλώματα - Τοιχώμα	ота Докоі	Συνδετήριοι	Πεδιλοδοκοί	Πέδιλα
Επικάλυψη Ρ	άβδων (mm) 15		max Апоот.	Ράβδων (cm)	20
Υποστυλώματα Τοιχώματα(Κο Κορμός Το Οριζόντια Κάθετα	λωνάκα) 14 ~ χωμάτων Φmin 4 10 ~ 1	Φmax 20 ~ 20 ~ 20 ~ 20 ~ .<	n(cm)	minΦ / (cr 10 ∨ 15 10 ∨ 15	ος Διαμέτρων 2 2 n)
Διάτμηση (Συ min Απόσται Φmin 8 ~		Ακρα Ανοιγμα	8 ~ 1		max εγκάρσια όσταση σκελών (cm) 25
Καταχώρηση	Διάβ	аара		ОК	Акиро

With the "Number of Configurations" option you specify the number of successive different diameters to be used for the reinforcement of the columns and walls respectively.

• For example, if you set number of diameters 2, the program will use two more consecutive diameters for the reinforcement of the pole,

i.e. a total of 3 (e.g. F16-F18-F20). If you enter the value 0 the program will use only one diameter.

The parameters relating to the reinforcement of the wall frame are then specified.

Κορμός Τοιχωμ	άτων				
	Φmin	Фmax	/min(cm)	minΦ	/ (cm)
Οριζόντια	10 ~	12 ~	5	10 ~	15
Κάθετα	10 ~	12 ~	5	10 ~	15

For horizontal and vertical bars respectively, you specify the minimum and maximum diameter to be used, as well as the minimum distance below which the diameter will be increased. While minF/cm is a limitation at the square centimetre level on the surface of the trunk. By default you set the ratio to F10/15 horizontally and vertically.

In the "Shear" field

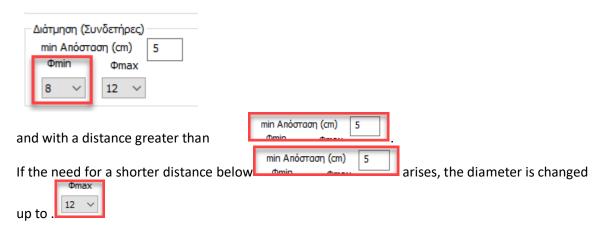
Διάτμηση (Συνδετήρες)			
min Απόσταση (cm) 5		Φ /max (cm)	max εγκάρσια απόσταση σκελών
Φmin Φmax	Ακρα	8 ~ 10	(cm)
8 ~ 12 ~	Ανοιγμα	8 ~ 10	25

First we start by defining a LOWER BORDER of reinforcement:

	Φ		/max (o	m)
Ακρα	8	\sim	10	
Ανοιγμα	8	\sim	10	

is the minimum for the connector reinforcement desired by the designer. If this reinforcement is sufficient, it shall be installed.

If the minimum reinforcement we have defined is now not sufficient, then the program searches for the reinforcement required based on intensity and starts with Φmin:



If eventually and with Φ max a distance shorter than the min distance is required, the program will implement it but a failure with symbol "S" will be displayed.



With the option you enter the maximum desired distance between the legs of the fastener above which the program automatically inserts an additional fastener. Thus the designer can increase or decrease this limit according to the requirements of his or her institution. Please note that the programme will also take into account the limits of the Regulation. 5.4.3.2:

β) Η απόσταση μεταξύ διαδοχικών διαμηκων ράβδων συγκρατούμενων με συνδετήρες δεν υπερβαίνει τα 200 mm, λαμβάνοντας υπόψη το EN 1992-1-1:2004, **9.5.3(6)**.

Δέσμες Ρά	άβδων	
OXI		<
Οχι	43	
Ολες οι Γων		
οπου Απαιτε	ίται	

In the scenarios of the EKOS-EAK: With the "Bonds of Bars" list long Anareta select whether or not to place bundles of bars at the tops of the columns. By selecting the corresponding option you determine whether to place beam bundles at all corners or only where required or not at all

1.3.6.3 Armaments - Beams & Brackets

For the "Beams" and "Connectors":

Enter the overlap in mm according to the climatic conditions.

In the field ^{Anόσταση Pάβδων} enter in cm the maximum and minimum desired spacing of the bars inside the beams.

Common for scenarios of EKOS-EAK and EUROCODE

Ικανοτικός Κόμ	Jβωv		Σιδηρών		Ξύλινα
Συνδυασμοί	Πλάκες	Δοκοί	Στύλα	οι Πέδιλα	ο Οπλισμα
Διαθέσιμοι Ράβδοι Φ(mm) 0 +	6,8,10,3	12, 14, 16, 1	8,20,22,25,	28,32,35,	Lmax(m) 12
Τλάκες Υποστυλώμα	τα - Τοιχώματα	а Докоі	Πεδιλοδοκα	οί Συνδετήριοι	Πέδιλα
Επικάλυψη Ράβδων ((mm) 25	Απόσταστ	η Ράβδων (α	m) Max 20	min 2
Ο Πλισμός Κορμού -					
Ανω	Κάτ	ω		Ενημ	ιέρωση Ολων
🗹 Επέκταση (Υπολ	.) 🗌 Επέκτα	ση (Υπολ.))		
2 φ 14 V	4 Φ	14 🗸	Φmax 20) 🗸 Ρηγμάτα	οση Φ 🛛 8 🗸 🗸
Ράβδοι Παρειάς	Φmin	12 🗸	Φmax 20) ~	
Ράβδοι Στηρίξεων	Φmin	14 ~	Φmax 20) 🗸 max Πλάτ	τος (cm) 120
Ομοιομορφισμός (

In the "Body Armament" field:

The options "**Extend Upper**" and "**Lower**" mean that the reinforcement of the supports will also pass through the opening and will be included in it.

Note: In the new version the option of extension is only of a calculative nature, as in any case when there is continuity, the reinforcement will pass to the next opening for anchoring purposes.

Then you select the minimum number and the maximum and minimum diameter of the bars of the main reinforcement of the span, supports and stringers.

First you determine the minimum main reinforcement of the upper opening. You enter the number and select the diameter of the bar and do the same for the reinforcement of the lower opening.

You then determine the maximum diameter of the bars.

Next, you select the minimum and maximum diameter of the main reinforcement bars to be used in the supports and struts.

Finally, you specify the minimum diameter to be used for the crack reinforcement.

In the max Width option, you specify the maximum distance above which two support rods are placed, and below which one common rod is placed.

Activate the checkbox Οιλισμού Ανοίγματος - Στήριξης for the program to homogenize the reinforcement in the opening and supports. This means that it puts the same reinforcement in the span and the supports and is usually used in beams with short lengths.

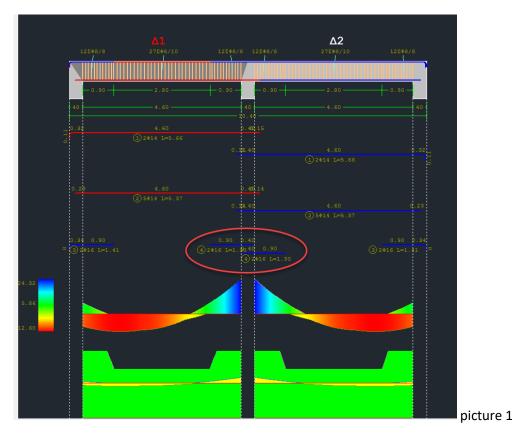
• IMPORTANT NOTE:

COMMON APERTURE ARMAMENT:

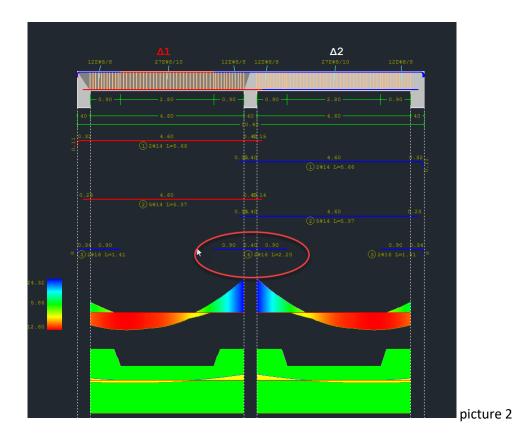
Activate the checkbox is common for the whole beam.

In the course of the implementation of the single reinforcement in the beams with common reinforcement of a certain length, the program places the additional bars of the supports according to criteria. There are two ways of placing the additional reinforcement of supports.

• The first way is that the additional bars come from each opening on either side and are placed on the corresponding side of the opening.



• The second way is to place a common support iron.



A. The first criterion is the <u>width of the support</u>, as defined by the reinforcement parameters of the beams.

Ικανοτικά	ς Κόμβων			Σιδηρώ	v		Ξú	ιλινα
Συνδυασμοί	Πλάκες		∆окоі	Στι	ύλοι	Πέδιλα	1	Οπλισμο
Διαθέσιμοι Ράβδο	1							
Φ (mm) 0	+ 6,	8,10,12	,14,16,1	8,20,22,2	25,28,32,	35,	Lmax	:(m) 12
Ίλάκες Υποστυ	λώματα - Τοιχ	ώματα	∆окоі	Πεδιλοδ	οκοί Συ	νδετήριοι	Πέδιλ	a
Επικάλυψη Ράβ		5 /	λπόστασι	η Ράβδων	(cm) Max	20] mi	in 2
Οπλισμός Κορι Ανω	Поп	Κάτω				Evous	ρωση (Ολων
Επέκταση (Υπολ.) 🗆 F		(Υπολ.)		mpc	- 1.000	onuv
2 φ 14			14 ~	φmax	20 ~	Ρηγμάτως	πμΦ	8 ~
Ράβδοι Παρειάς		Φmin	12 ~	Φmax	20 🗸			
Ράβδοι Στηρίξει	να	Φmin	14 ~	Φmax	20 ~	max Πλάτα	ος (cm)	120
			ατος - Στ	πριζης		m	inΦ	/ (cm)
	(01) 10		Φmin	Фmax	Στήρι	Տղ 8	\sim	10
Προτίμηση Κά	θετοι (90)	\sim	8 ~	12 ~	Avoi	/µa 8	~	10
Δισδιαγώνιος Ο	Οπλισμός	Λοξι	ος Οπλισ	μός	`	1		
🗸 Κρίσιμο μήκα	ος για Κάμψη	0.25	*L					

If this exceeds the value of the max support width (see figure 1), then separate support bars are installed per side.

If the width of the support is less than the max width, then a common iron is placed for the whole support (see figure 2).

• NOTE:

The change of this parameter after the creation of the beam spans requires deleting and recreating them.

B. The second criterion has to do with the <u>width of the beams</u> in the support. If this width is different for the two beams, then separate additional support bars are installed. If not, a common bar shall be fitted

• CONCLUSIONS:

A joint is only placed if both <u>of</u> the above criteria are met:

- Support width< max width in parameters
- Same beam width

The next section deals with the selection of parameters for the **shear reinforcement of the beams**.

	ευνδετήρες)					min	nΦ /(α	cm)
min Απόστα	ση (cm) 10	Φr	nin	Φmax	Στήριξη	8	~ 10	
Προτίμηση	Κάθετοι <mark>(</mark> 90)	- 8	~	12 ~	Ανοιγμα	8	~ 10)
Δισδιαγώνι	ος Οπλισμός	Λοξος	Οπλισμ	ιός	~			

First you define the minimum distance in centimetres. Then you determine whether you want the intersection to be received from vertically positioned fasteners, or from obliquely positioned fasteners (45°). You then specify the minimum and maximum diameter of the fasteners to be used.

NEO!

Added the user option to receive the shear either with oblique reinforcement or with biaxial connectors, when this follows from the regulation.

min Апо̀σтаση (cm) 10	Φmin Φmax Στήριξη	minΦ / (cm) 8 ∨ 10
Προτίμηση Κάθετοι (90) 🗸 🗸	8 ~ 12 ~ Avoiyµa	8 ~ 10
Δισδιαγώνιος Οπλισμός	Λοξος Οπλισμός ~ Συνδετήρες	
🗹 Κρίσιμο μήκος για Κάμψη 🖵	Λοξος Οπλισμός 	ļ
	minΦ / (cm)	
Στήρ	_{ξη} 8 ~ 10	

8

Ανοιγμα

Finally, in the options you specify in the support and in the opening respectively the diameter and the distance you wish. If this reinforcement is sufficient, it is installed.

10

 \sim

If now the minimum reinforcement we have defined is not sufficient, then the program searches for the reinforcement required based on intensity and starts with Φmin:

min Απόσταση (cm)	10	l
-------------------	----	---

and with a distance greater than

If the need arises for a shorter distance under the

Φmax

min Απόσταση (cm)	10	
		the

diameter is changed up to .	12	\sim
diameter is changed up to .		

If eventually and with Φ max a distance shorter than the min distance is required, the program will implement it but a failure with symbol "S" will appear.

NEO!

The new version of the program added the possibility to define the critical bending length of beams by the designer as a percentage of their total length.

Διάτμηση (Συνδετήρες)		
min Απόσταση (cm) 10	Фmin Фmax ₅₋₁₋₁ -г-	minΦ / (cm) 8 ∨ 10
Προτίμηση Κάθετοι (90) 🗸	2 Thpich	
	δ 🔹 12 👻 Ανοιγμα	8 ~ 10
ο.2	25 * L	

The default value is 0.25 of the length. To be taken into account the parameter must be checked. If it is not checked, the program will take into account as the critical length the one received so far, i.e. the shear length.

• **OBSERVATION:**

Evημέρωση Ολων : after completing the parameter selections and before closing the window, press the Update All button to update the parameters.

1.3.6.4 Pedestals

Πλάκες Υποστυλώματα - Τοιχώματα Δοκοί	Συνδετήριοι Πεδιλοδοκοί Πέδιλα
Επικάλυψη Ράβδων (mm) 25 Απόστ	ταση Ράβδων (cm) max 20 min 5
Οπλισμός Κορμού Ανω Γελέκταση Κάτω Ελέκταση	Ομοιομορφισμός Οπλισμού Ανοίγμ-Στήρ.
4 Φ 14 V 4 Φ 14 V	Φmax 20 🗸 Ρηγμάτωση Φ 8 🗸
Ράβδοι Παρειάς Φmin 12 ~	Φmax 20 ν Κοινός Οπλισμός Ανοιγμάτων
Ράβδοι Στηρίξεων Φmin 14 ~	Φmax 20 🗸 max Πλάτος (cm) 120
Οπλισμός Πέλματος / (cm) Διαμήκης Φ 12 ∨ / 15	Εγκάρσιος Φ 12 ∨ / 15
Διάτμηση (Συνδετήρες)	
min Απόσταση (cm) 10 Φmin	тіпФ / (ст) Фтах Στήριξη 8 V 10
Προτίμηση Κάθετοι (90) 🗸 8 🗸	12 ~ Avoiyµa 8 ~ 10

For the frame reinforcement as well as for the shear reinforcement the same applies as for the beams and the connecting beams. The additional element for foot beams is the definition of the minimum longitudinal and transverse reinforcement.

Οπλισμός Πέλματος / (cm)									
Διαμήκης	Φ	12 ~ / 15	Εγκάρσιος	Φ	12	~ /	15		

1.3.6.5 Armaments - Sandals

Enter the overlap in mm according to the climatic conditions.

In the field Anooτ Pάβδων (cm) enter in cm the maximum and minimum desired distance of the bars inside the pedestals.

Πλάκες	Υποστυλώματα	ο - Τοιχώματ	τα Δοκοί	Συνδετήριοι	Πεδιλοδοκοί	Πέδιλα	
Επικάλυ	ιψη Ράβδων (m	n) 40		max Απόσταση Ράβδων (cm) 15			
Πέλμα							
	Φmin	Φmax	/min(cm)	minΦ	/ (cm)		
	12 🗸 🗸	20 ~	10	12	/ 15		

Finally, for the tread of the pedestals you specify the minimum and maximum diameter of the reinforcement and the minimum distance of the bars below which the program changes

	Πέλμα							
		Φmin	Φmax	/min(cm)		minΦ	/ (cm)	
		40				12	15	
diameter		12 ~	20 ~	10	. In the option	12 ~	15	you specify the
	and the	distance	of the	reinfor	•	to place	e. If this	reinforcement is

diameter and the distance of the reinforcement you wish to place. If this reinforcement is sufficient, it is placed. Otherwise, the reinforcement resulting from the program check is placed.

1.3.7 Iconic Node

In the last section "Icannotic Node"

Παράμετροι Δομι	κών Στοιχε	ίων						Х
Συνδυασμοί	Πλάκ	ες	Δοκοί	Στύ	λοι	Πέδιλα	Οπλισμοί	
Ικανοτι	κός Κόμβων			Σιδηρών	/		Ξύλινα	
Διεύθυνση γ Ακραία Μεσαία	 acd < 3.5 3.5 ✓ 1.35 3.5 ✓ 1.35 ✓ 1.35 			Σιδηρών	/ −Διεύθυνση Ακραία Μεσαία Πάκτωση Ελεύθερο	= a 3. 3.	cd <= 5 5 35	
Καταχώρηση		Διάβασμα				OK	Cancel	

specify by x and z the parameters to be used in the satisfaction check.

At the bottom

Στάθμη	γ	Z
0 - 0.00		
1 - 300.00		 Image: A start of the start of
2 - 600.00	~	

you select the level or levels and the direction where you wish to perform the level check.

Specify the upper bound on the satisfactory node enlargement factor acd.

In general, the value of $_{acd}$ is defined to be less than or equal to the value of the seismic behaviour coefficient q.

For the footing positions of the columns, _{acd} shall be taken as 1,35.

Check the corresponding option and enter the value you want.

If you do not check any option, the program will take into account the value of acd it will calculate.

OBSERVATION:

The definition of the node type will then be done with the "Node Characterization" option. Not "Node Characterization" by the user means that all nodes are taken as free in both directions, except for the packed nodes.

Finally, in the investigation of the pole

Προσαύ ξ		Ροπής (Ικα	nuor urác)		
	ηση νδ.	Pointy (IKC My	Mz	M++	Mz
ΤΕΛΟΣ	3	33.604	-40.115	My 33.604	-60.463
ΤΕΛΟΣ ΤΕΛΟΣ	4	33.604	-40.115	33.604	-60.463
ΤΕΛΟΣ ΤΕΛΟΣ	5	25.082	-39.773	25.082	-59.266
	5				
ΤΕΛΟΣ	7	25.082	-39.773	25.082	-59.266
ΤΕΛΟΣ		35.577	-5.907	35.577	59.266
ΤΕΛΟΣ	8	35.577	-5.907	35.577	59.266
τελος	9	27.054	-5.565	27.054	60.463
τελος	10	27.054	-5.565	27.054	60.463
τελος	11	34.196	-39.773	34.196	-59.266
τελος	12	34.196	-39.773	34.196	-59.266
τελος	13	24.490	-40.115	24.490	-60.463
τελος	14	24.490	-40.115	24.490	-60.463
τελος	15	36.168	-5.565	36.168	60.463
τελος	16	36.168	-5.565	36.168	60.463
τελος	17	26.462	-5.907	26.462	59.266
τελος	18	26.462	-5.907	26.462	59.266
τελος	19	35.577	-38.975	35.577	-56.472
τελος	20	35.577	-38.975	35.577	-56.472
τελος	21	27.054	-38.633	27.054	-55.274
τελος	22	27.054	-38.633	27.054	-55.274
τελος	23	33.604	-7.047	33.604	55.274
τελος	24	33.604	-7.047	33.604	55.274
τελος	25	25.082	-6.705	25.082	56.472
τελος	26	25.082	-6.705	25.082	56.472
τελος	27	36.168	-38.633	36.168	-55.274
τελος	28	36.168	-38.633	36.168	-55.274
τελος	29	26.462	-38.975	26.462	-56.472
τελος	30	26.462	-38.975	26.462	-56.472
τελος	31	34.196	-6.705	34.196	56.472
TELOS	20	94 164	6 705	94 164	EC 470

there are, for each combination, the results of the satisfactory (initial and incremental moments). Of course, for the direction not taken into account by the satisficer, the initial and incremental moments are the same.

1.3.7.1 Other ways of exempting an address from the control of the addressee

In the "Combinations" field the list of all combinations is displayed.

The first number is the number of the combination and second, in brackets, is the number of the equation from which we obtain

The "L/A" column indicates the marginal state of the combination and the "Against" column indicates which direction is involved for the <u>satisfactory control</u>.

Thanks to the bar:

Συνδυασμοί Σετ Φορτίσεων	(101)	Αστ. Λειτ.	+X	X	+Z	Z	No	
--------------------------	-------	------------	----	---	----	---	----	--

you can modify both the limit state and the direction.

In the column "L/A" you specify whether the specific combination is Failure or Functionality. If you want to make a change, you select the combination and press the

key Λειτ. ή Αστ.

The next column "Against" is about the satisfaction check and in which direction the particular

combination is involved. By selecting the corresponding button

you select the direction in which the particular combination will participate performing the satisfaction check.

+X

+Z

Finally, by selecting the button participate in the satisfaction check.

The regulation mentions the capacity check and the necessity to perform it per direction of the earthquake <u>and not per direction of the column</u>.

The exclusion of a direction from the control of the capacity for one or more columns is implemented in SCADA by the zeroing of the incremental factor acd for those seismic combinations where the seismic force, for the specific direction, participates with unity. This is the meaning of the characterization of the combinations that appears in the sizing parameters.

ράμετροι Δομικ	ών Στοιχεί	ων							
Ικανοτικ	ός Κόμβων			Σιδηρών				Ξύλινα	
Συνδυασμοί	Πλάκε	ς	Δοκοί	Στύ	λοι	П	έδιλα	Οπλισμοί	
Συνδυασμοί Σετ Φ	Φορτίσεων	(101	.) Aστ.	Λεπ.	+X	X	+Z	Z No	
Συνδυασμοί						۸/A	Κατά	^	1
1(14) +1.35Lc1	+1.50Lc2					Α			l
2(1) +1.00Lc1+	0.50Lc2					Α			l
3(2) +1.00Lc1+	0.30Lc2+1.	00Lc3+0.	30Lc4+1.0	0Lc5+0.3	0L	Α	+X		l
4(2) +1.00Lc1+	0.30Lc2+1.	00Lc3+0.	30Lc4+1.0	0Lc5+0.3	0L	Α	+X		l
5(2) +1.00Lc1+	0.30Lc2+1.	00Lc30.	30Lc4+1.0	0Lc50.3	0L	Α	+X		l
6(2) +1.00Lc1+	0.30Lc2+1.	00Lc30.	30Lc4+1.0	0Lc50.3	0L	Α	+X		l
7(2) +1.00Lc1+	0.30Lc21.	00Lc3+0.	30Lc41.0	0Lc5+0.3	0L	Α	X		L
8(2) +1.00Lc1+	0.30Lc21.	00Lc3+0.	30Lc41.0	0Lc5+0.3	0L	Α	X		l
9(2) +1.00Lc1+	0.30Lc21.	00Lc30.	30Lc41.0	0Lc50.3	0L	Α	X		l
10(2) +1.00Lc1	+0.30Lc21	.00Lc30	.30Lc41.	00Lc50.	30	Α	X		l
11(3) +1.00Lc1	+0.30Lc2+1	.00Lc3+0	.30Lc4+1.	00Lc5+0.	30	Α	+X	~	
Συντελεστές Στά	θμης	1	/ (1- 0)					~	•
Στάθμη	Х	Y	Z		Eid	σαγωγι	ή Συνδυα	ισμών	
0 - 0.00	1.000	1.000	1.000		Упо	λογισμ	ός Συνδι	υασμών	
1 - 300.00	1.000	1.000	1.000]
					Συνδυα	ασμός	G+ψ2Q	101	
				Au	πόματι	η Διαστ	τασιολόγι	ηση Μελέτης	
				End	vauno	λογισμ	ός μεγεθ	ών KAN.EΠE.	

a combination is marked by x or by z when the corresponding seismic force has a factor of one.

So in conclusion, we would say that when I want to exclude one direction from a pole so that it does not become satisfactory, I go to the characterization and choose the direction of the local axis that is parallel to the direction of the earthquake I want to exclude.

Now if the pole is twisted or the pseudo axes are twisted as in the EAK, I choose the local one with the smaller angle than the corresponding seismic one I want exclude. In this way the program will calculate acd for me only for the specific seismic direction (but obviously for both local directions of the pole) and will not calculate any acd for the seismic combinations of the other direction.

Indicatively in the following printout:

Κόμβο		4						
	ς Κάτω = SMRby		acdy	acdy	SMRbz	SMEbz	acdz	acdz
	-	-	calc	-			calc	
3		15.876					59.929	
4	134.000		10.973	4.000	134.000	2.907	59.929	4.000
5	134.000		11.189	4.000	144.800	4.605	40.880	4.000
6	134.000		11.189	4.000	144.800	4.605		4.000
7	144.800		12.091	4.000	134.000	4.605	37.831	4.000
8	144.800			4.000	134.000	4.605		4.000
9	144.800		11.857	4.000	144.800	2.907		4.000
10	144.800		11.857	4.000			64.759	
11	134.000		11.189	4.000		3.416		
12	134.000		11.189	4.000	134.000	3.416		4.000
13		15.876		4.000	144.800	5.114		4.000
14	134.000			4.000		5.114		4.000
15		15.876		4.000		5.114		
16 17	144.800		11.857	4.000		5.114		
	144.800		12.091	4.000		3.416		
18		15.569		4.000	144.800	3.416		
19	134.000		11.728	4.000		4.605		4.000
20 21		14.853		4.000		4.605 2.907		
22	134.000		11.975	4.000				
23	134.000		11.975	4.000 4.000	144.800	2.907 2.907		4.000
23	144.800	14.547 14.547	12.941	4.000	134.000 134.000	2.907		4.000
25		14.853		4.000			40.880	
26	144.800			4.000			40.880	
27	134.000		11.975	4.000		5.114		
28	134.000		11.975	4.000	134.000	5.114		4.000
29	134.000		11.728	4.000	144.800	3.416		4.000
30		14.853					55.103	
31	144.800		12.673	4.000		3.416		
32	144.800		12.673	4.000		3.416		4.000
33	144.800		12.941	4.000	144.800	5.114		4.000
34	144.800		12.941	4.000	144.800	5.114		4.000
35					134.000			
36	134.000		33.320	0.000		12.264		
37	144.800		44.761	0.000				
38	144.800		44.761	0.000	134.000	12.774		0.000
39	134.000	4.205	41.422	0.000	144.800	12.774	14.736	0.000
40	134.000	4.205	41.422	0.000	144.800	12.774	14.736	0.000
41	144.800	5.228	36.006	0.000	144.800	12.264	15.349	0.000
42	144.800	5.228	36.006	0.000	144.800	12.264	15.349	0.000
43	134.000	4.921	35.397	0.000	134.000	12.774	13.637	0.000
44	134.000		35.397	0.000	134.000	12.774	13.637	0.000
45	144.800	3.899	48.283	0.000	134.000	12.264	14.204	0.000
46	144.800	3.899	48.283	0.000	134.000	12.264	14.204	0.000
47	134.000	3.899	44.682	0.000	144.800	12.264	15.349	0.000
48	134.000	3.899	44.682	0.000	144.800	12.264	15.349	0.000
49	144.800		38.250	0.000	144.800	12.774	14.736	0.000
50	144 000	4 663	00,050	0.000	144,000	10 004	14 804	0.000

you can see that acd has been calculated for combinations up to 34 (it is the combinations +x and -x) while from 35 onwards no acd has been calculated at all (it is the combinations +z and -z)

Still, another way avoid content in one direction is tweak the combination designations in the dimensioning with the tools above.

Συνδυασμοί	Πλάκες	Δοκοί	Στύλοι	Πέδιλα		Οπλια	ομοί
Συνδυασμοί Σετ Φα	ορτίσεων	(101) Aor.	Λειτ. +Χ	X +	۶Z	Z I	No
Συνδυασμοί			_		۸/A	Κατά	^
1(14) +1.35Lc1+	1.50Lc2				Α		
2(1) +1.00Lc1+0	.50Lc2				Α		
3(2) +1.00Lc1+0	.30Lc2+1.00Lc3	3+0.30Lc4+1.0	0Lc5+0.30Lc7+0	0.30Lc9	Α	+X	
4(2) +1.00Lc1+0	.30Lc2+1.00Lc3	3+0.30Lc4+1.0	0Lc5+0.30Lc7(0.30Lc9	Α	+X	
5(2) +1.00Lc1+0	.30Lc2+1.00Lc3	30.30Lc4+1.0	0Lc50.30Lc7+0	0.30Lc9	Α	+X	
6(2) +1.00Lc1+0	.30Lc2+1.00Lc3	30.30Lc4+1.0	0Lc50.30Lc7(0.30Lc9	Α	+X	
7(2) +1.00Lc1+0	.30Lc21.00Lc3	3+0.30Lc41.0	0Lc5+0.30Lc7+0	0.30Lc9	Α	X	
8(2) +1.00Lc1+0	.30Lc21.00Lc3	3+0.30Lc41.0	0Lc5+0.30Lc7(0.30Lc9	Α	X	
9(2) +1.00Lc1+0	.30Lc21.00Lc3	30.30Lc41.0	0Lc50.30Lc7+0	0.30Lc9	Α	X	
10(2) +1.00Lc1+	0.30Lc21.00L	:30.30Lc41.	00Lc50.30Lc7-	-0.30Lc9	Α	X	*
<						>	

You can select one or more combinations, depending on the seismic direction, and mark it with "No". In this way they will not be taken into account at all in the satisfactory.

Finally, a final way to avoid checking on one of two addresses is to set the acd =0 limit in the general parameters.

You will achieve the same result again.

Συνδυασμοί	Πλάκες	Δοκοί	Στύλοι	Πέδιλα	Οπλισμοί
Ικανοτικά	ός Κόμβων		Σιδηρών		Ξύλινα
Διεύθυνση χ Ακραία [Μεσαία [Πάκτωση [Ελεύθερο [<pre>acd <= 3.5 3.5 1.35 3.5 3.5 3.5</pre>		Ακρα Μεσα Πάκτ	aia 🛛 🖸	icd <=

1.3.8 Iron

The next section deals with the parameters of the control of the cross-sections of **steel structures**. Selecting the section displays the following dialog box

Συνδυασμοί	Πλάκες	Δοκοί	Στύλοι	Πέδιλα	Οπλισμοί
Ικανοτικό	ς Κόμβων		Σιδηρών		Ξύλινα
Ονομασία		^	Επιλογή όλ	ων	Αποεπιλογή όλων
Γραμμές, Κύκλοι					
Υπ/τα Σκυροδέμα			Сору		Paste
Μανδύες Σκυροδ	-		Παράμετροι		
Δοκοί Σκυροδέμα					
Πεδιλοδοκοί				FENIK	IOI
Συνδετήριοι Δοκι	oi			ΕΦΕΛΚΥ	2002
Πέδιλα				LYEARI	21402
Μεταλλικα Υπ/τα				ΔΙΑΤΜ	ΗΣΗ
Μεταλλικές Δοκα	pi				
Πλέγμα Επιφάνει	ας			ΣΤΡΕ	PΗ
Μαθηματικό Μον	τέλο				
Μαθηματικό Επιφ	οανειακό			ΘΛΙΫ	РН
Πλέγμα 3D				KAM	
Πλέγμα 2D				NAM	PU
Πλάκες-Τομές				камұн & А	EONIKH
Μεταλ.Υποστυλά	ύματα		К	ΆΜΨΗ & Δ	ΙΑΤΜΗΣΗ
Μεταλ.Δοκοί					
Μεταλ.Κεφαλοδο	жоі		КАМЧ	Η ΔΙΑΤΜΗ	ΣΗ ΑΞΟΝΙΚΗ
Μεταλ.Τεγίδες					
Μεταλ.Μηκίδες		~		Defa	ult

For metal structures, to set the parameters related to the sizing of metal elements, select the "Iron" field. The box that appears is divided into two parts: on the left there is a list of all layers and on the right a list of controls, each containing the corresponding parameters of that control. First you select one layer, or more with the help of "ctrl", or all of them with the "Select all" button. Then you activate the checkbox of a control and select the corresponding key to enter the parameters.

The "Deselect all" button cancels the previous selection of layers.

Once you have set the parameters of one layer you can copy them to other layers using the "Copy" command. Select a layer and "Copy", then select another layer and "Paste" and the parameters of the first layer are copied to the second one.

Συνδυασμοί	Πλάκες	Δοκοί	Στύλοι	Πέδιλα	Οπλισμοί
Ικανοτικά	ος Κόμβων		Σιδηρών		Ξύλινα
Ονομασία		^	Επιλογή ό	λων	Αποεπιλογή όλων
Γραμμές, Κύκλο	I.				
Υπ/τα Σκυροδέμ			Сору		Paste
Μανδύες Σκυρο	δέματος		Παράμετροι		
Δοκοί Σκυροδέμ	ατος			TENI	KOT
Πεδιλοδοκοί				I ENI	KOI
Συνδετήριοι Δοκ	oi			ΕΦΕΛΚ	(ΣΜΟΣ
Πέδιλα					
Μεταλλικα Υπ/τα				ΔΙΑΤΝ	ΜΗΣΗ
Μεταλλικές Δοκ					
Πλέγμα Επιφάνε	-			ΣΤΡΕ	EΨH
Μαθηματικό Μον				ΘΛΙ	
Μαθηματικό Επια	ρανειακό			0/1	ΨΠ
Πλέγμα 3D				KAM	ΨH
Πλέγμα 2D Πλάκες-Τομές					
ΠΛάκες-Τόμες				КАМѰН &	AEONIKH
Μεταλ.Υποστυλ	ώματα			КАМΨН & Д	ΔΙΑΤΜΗΣΗ
Μεταλ.Δοκοί					
Μεταλ.Κεφαλοδ	окоі			ΙΨΗ ΔΙΑΤΜ	ΗΣΗ ΑΞΟΝΙΚΗ
Μεταλ.Τεγίδες					
Μεταλ.Μηκίδες		~		Defa	ault
		•			

The definition of the sizing parameters of the metallic sections is done layer by layer. You select the layer for which you want to define the parameters (e.g. Metallic Sub/Underground) and per control category (General, Tensile, Shear, etc.), you define the corresponding parameters. Once you have set the parameters for a layer, the program allows you to copy these parameters to another layer using the Copy And Paste logic.

È **EXAMPLE**:

Suppose you have set all the parameters for the Metallic Bases layer and you want to pass these parameters to the Metallic Beams layer. Select the check box next "Default" and all the parameter categories are automatically selected.

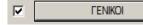
Then select the "Copy" button and select the Metal Beams layer and press the "Paste" button that has already been activated. Now all the parameters of the Metallic Lumber layer have been passed to the Metallic Beams layer as well.

An alternative method to set the same parameters for all layers that include metallic crosssections is to select all layers with the "Select all" button and set the parameters for each control category once.

It should also be noted that to set parameters at least one (or more) layer must be selected.

The parameters for each control category are explained in detail below. By selecting

the "GENERAL" section, the following dialog box appears:



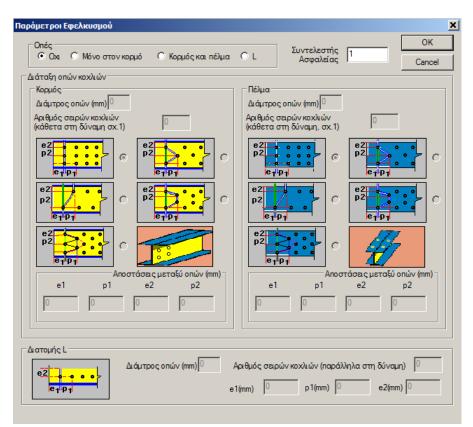
to set the GM safety factors:

Γενικοί Παράμετροι	×
Συντελεστές Ασφαλείας	
YM0 1	
YM1 1	
vM2 1.25	
Орю 0.01	
OK Cancel	

 γ MO= transverse stress resistance for each category of members γ M1 = resistance to buckling based on tests cM2= tensile fracture strength of cross sections

Here you can set the individual safety factors and a minimum threshold for the intensive sizes below which the intensive sizes are not taken into account. The above values are those proposed by the Eurocode. ΕΦΕΛΚΥΣΜΟΣ

To set the "Tensile" parameters and check the position of the holes (EC3 chapter 1.8 §3.5):



For the holes define the distances from the ends, the diameter and the number of rows on the torso and tread.

In the case of an L section, set the parameters at the bottom of the box.

The rationale here is to specify whether the application during the tensile test take into account the bolt holes of the connections in order to account for reduced tensile strength of the crosssection. If you decide to provide data you will derive it, for the specific layer (e.g. Metallic Supports) from the corresponding connection checks you should have already performed. You must therefore have previously checked the connections before you can give data here.

The safety factor for all checks is predefined and equal to unity, which means that the program calculates the ratio of the corresponding stress to strength and if this ratio is greater than unity, a failure occurs.

 $\mathbf{\nabla}$

☑	ΔΙΑΤΜΗΣΗ
Παρά	μετροι Διάτμησης 🛛 🗙
Συντ	rελεστής Ασφαλείας
	υρώσεις Οχί 🔲 στη Στήριξη 🗖 Ενδιάμεσα όσταση Νευρώσεων 30
ΓΣτ	ήριξη
6	Ακαμπτη
c	та т
	OK Cancel

Here you define whether the elements of this Layer have ribs or not and if they do, where they are present (on the support and/or the trunk). You also define the spacing of the ribs as well as whether the connection of an element is rigid or not.

◄	ΣΤΡΕΨΗ
Παρά	μετροι Στρέψης 🛛 🗙
Συν	τελεστής Ασφαλείας 🛛 👖
ΓΣτ	ρεπτική Ροπή
6	Οχα Ο Κατανεμημένη
	Ο Συγκεντρωμένη
	Απόσταση απο αρχή
Апо	σταση απο τέλος (cm)
	Τιμή (KNm)
Μήκα	ος Στοιχείου (cm) 300
Σι	υνθήκες Στήριξης
	Τύπος Ο
	OK Cancel

Here you specify whether the members of the layer are loaded by torsional moment (distributed or concentrated). If they are loaded, you define the elements of the loading. You also specify the support conditions of the members based on the support type shown in the graph.

For all checks set the "Safety Factor", i.e. the ratio between a design value and the corresponding resistance value, which is 1 by default.

КАМФН	Παράμετροι	×
КАМѰН & АΞОΝΙКН	Συντελεστής Ασφαλείας	1
ΚΑΜΨΗ & ΔΙΑΤΜΗΣΗ	ок	Cancel
καμψη διατμήση αξονική		

1.3.9 Wooden

The next section deals with the parameters of the cross-section control of wooden structures. Selecting the section displays the following dialog box

Συνδυασμοί Πλ	λάκες	Δοκοί	Στύλοι	Πέδιλα	0	Οπλισμοί
Ικανοτικός Κόμβ	βων		Σιδηρών		Ξύλινο	٥
			Επιλογή όλα	ων	Αποεπιλο	γή όλων
Ονομασία			Сору		Pas	te
Γραμμές, Κύκλοι			ym		1 00	
Υπ/τα Σκυροδέματος			Φυσική 1.3	7	Glulam	1.25
Μανδύες Σκυροδέματος					l	
Δοκοί Σκυροδέματος			Κλάση λειτουργίας	Clas	s 1	~
Πεδιλοδοκοί						
Συνδετήριοι Δοκοί			Διάρκεια Φόρτισης	Móv	ηη	~
Πέδιλα			🗹 Υπολογισμός kh	(& 3.2 -	3.3)	1
Μεταλλικα Υπ/τα			ksvs (86.6.) 0		(0.5 + 7)	0.67
Μεταλλικές Δοκοί			ksys (&6.6.) 0	KC	(86.1.7.)	, 0.07
Πλέγμα Επιφάνειας			🗹 Υπολογισμός ks	hape (&	6.1.8)	1
Μαθηματικό Μοντέλο			🗹 Υπολογισμός km	(8.6.1)	5)	1
Μαθηματικό Επιφανειακό				-	0)	-
Πλέγμα 3D			Διάταξη Οπών (Ar	net)		
Πλέγμα 2D				•	-	° ° °
Πλάκες-Τομές					2	· • • 7
			4P t		P1	
Μεταλ.Υποστυλώματα					0	
Μεταλ.Δοκοί			Διάμετρος οπών (mm)	0	
Μεταλ.Κεφαλοδοκοί			Αριθμός σειρών κα		0	p1(mm)
Μεταλ.Τεγίδες Μεταλ Μανάδος			(παράλληλα στις ί	νες)		
Μεταλ.Μηκίδες Μεταλ.Μετωπικοί		h.d.	🗌 Διάταξη Ζικ-Ζα	ικ (Εναλί	λάξ) [0
Μεταλ.Μετωπικοι		*				

The definition of the dimensioning parameters of the wooden sections is done layer by layer. You select the layer whose parameters you want to set (e.g. Wooden Lumber Yards) and set them. Then the program gives you the possibility to copy these parameters to another layer with the logic of Copy And Paste

Сору	Paste
------	-------



EXAMPLE

Suppose you have set all the parameters for the Wooden Lodges layer and you want to pass them to the Wooden Beams layer. Select the Wooden Lumber layer, press the "Copy" button and select the Wooden Beams layer and press the "Paste" button which is already activated. Now all the parameters of the Wooden Lumber Yards layer have been passed to the Wooden Beams layer. The parameters that the designer is asked to define are then explained in detail on a case-by-case basis:

Safety factors gM

The values of the safety factors γM for materials shall be used for cases of normal or accidental loading (accidental loading does not include the case of earthquake, to which paragraph 2.9.4 of this document applies).

Fundamental combinations of actions	cM		
Natural timber (Solid)	1.3		
Glued laminated timber (Glulam)	1.25	Members	

Indicative values (EC5 - Table 2.3) are presented in the table below:

Class of operation of structures - influence of moisture content percentage (MoC)

Humidity is related the environmental conditions in which the structure (or member) operates, i.e. temperature and relative humidity. The Regulation defines three categories of operation (EC5 - 2.3.1.3):

Category of operation	Temperature and relative humidity environment	P.P.Y.	Examples
1	Temperature 20° C The relative humidity exceeds 65% only for a few weeks a year	(9±3) %	Closed structures that heated (hot roofs, floors and interior walls)
2	Temperature 20° C The relative humidity exceeds 85% only for a few weeks a year	(12±3) % (15±3) %	Enclosed structures not heated or periodically heated (e.g. holiday homes) Open roofed constructions, cold roofs, external walls and more generally structures that are not directly exposed to the weather phenomena
3	Climate conditions leading to a rate of moisture content	> 19 %	Structures in damp places or structures exposed to

greater category 2	weather conditions (e.g. direct wetting)

Charging duration categories

The strength of a member decreases with the duration of the load, which is why the Regulation divides actions into categories according to their duration (EC5 - 2.3.1.2):

Duration category	Period of time	Load example
Permanent	over 10 years old	same weight
Long term	6 months to 10 years	storage loads
Midyears	1 week to 6 months	imposed floor loads
Short-term	up to 1 week	snow
Instant		wind, accidental loads

The coefficients **Kh**, **Kshape**, **Km** are automatically calculated by the program according to the respective chapters of EC5. The designer can define his own values by unchecking the checkbox and entering the value in the corresponding field.

Υπολογισμ	1		
ksys (&6.6.)	0.67		
🗸 Υπολογισμ	ιός kshap	be (& 6.1.8)	1
Υπολογισμ	ιός km (8	6.1.6)	1

- **Kh** is an incremental factor and depends on the type of wood, the size of the member and the type of loading.
- Ksys is an incremental factor relating to continuous cross-sectional systems of cargo
- Kcr is a decreasing coefficient with a constant value of 0,67 for shear
- Kshape is incremental coefficient is incremental torsion
- Km involves biaxial bending, alternately reducing one of the 2 torques

6.6 Αντοχή συστήματος

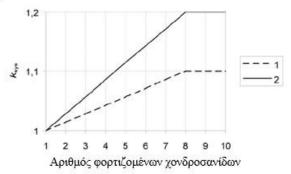
(1) Τα μεγέθη αντοχής ισαπεχόντων παρομοίων απλών μελών, μελών σύνθετης διατομής ή δομικών συστημάτων, που συνδέονται εγκαρσίως μεταξύ τους με ένα συνεχές σύστημα διανομής των φορτίων, μπορούν να πολλαπλασιάζονται επί τον συντελεστή αντοχής συστήματος k_{sys}.

(2) Με την προϋπόθεση ότι το συνεχές σύστημα κατανομής των φορτίων είναι επαρκές για να μεταφέρει φορτία από ένα μέλος στα γειτονικά του, ο συντελεστής k_{3ys} θα πρέπει να λαμβάνεται ίσος προς 1,1.

(3) Ο έλεγχος αντοχής του συστήματος κατανομής των φορτίων θα πρέπει να γίνεται με την παραδοχή ότι τα φορτία αποτελούν βραχυχρόνια φόρτιση.

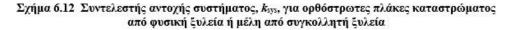
ΣΗΜΕΙΩΣΗ: Για δικτυώματα στεγών τοποθετημένων σε αξονικές αποστάσεις όχι μεγαλύτερες από 1,2 m, μπορεί να θεωρηθεί ότι τα καδρόνια επικεραμώσεως, οι τεγίδες, ή επιφανειακά στοιχεία που εδράζονται στα δικτυώματα μπορούν να διανείμουν το φορτίο στα γειτνιάζοντα δικτυώματα, με την προϋπόθεση ότι όλα τα παραπάνω δομικά μέλη κατανομής φορτίου καλύπτουν τουλάχιστον δύο ανοίγματα, και είναι κλιμακωτά διατεταγμένα.

(4) Για ξύλινα ορθόστρωτα καταστρώματα ή πατώματα θα πρέπει να χρησιμοποιούνται οι τιμές του k_{sys} που δίδονται στο Σχήμα 6.12.



Υπόμνημα:

- 1 Ηλωμένες ή κοχλιωμένες χονδροσανίδες
- 2 Προεντεταμένες ή συγκολλημένες χονδροσανίδες



Διάταξη Οπών (Anet)		·
P 1		Pt
Διάμετρος οπών (mm)	0	
Αριθμός σειρών κοχλιών (παράλληλα στις ίνες)	0	p1(mm)
🗌 Διάταξη Ζικ-Ζακ (Εναλλ	\άξ)	0

Finally, in the *Hole Layout* field you define an initial approximate layout of the holes in the wooden member that is used for the specification of the members and is then checked when solving the connections.

Set the diameter of the holes and the number of rows of bolts, as well as the distance p1 according to the two drawings. To define a Zig-Zag layout you select the corresponding checkbox Διάταξη Ζικ-Ζακ (Εναλλάξ)

1.4 Consolidation of Members



In the new version of the program a new group of commands has been added which concerns the consolidation of metallic members for the calculation and display of bending and deformation checks based on EC3.

Important notes:

• With the use of this tool, it is now possible for the designer to correctly define the initial length of the member per direction to be taken into account in the

controls of bending.

Έλεγχος λυγισμού

• This determination has so far been made using the known coefficients (see next section



Διεύθυνση Υ	Διεύθυνση Ζ
Μήκος Μέλους	Μήκος Μέλους
Ο Πραγματικό	Ο Πραγματικό
Συντελεστής	Συντελεστής

- Now with the use of the consolidation by direction, the process of the rates will not be needed, but the consolidation will be done, in most cases automatically.
- It should also be noted that with the process of consolidation it is correctly taken calculating the bending length and in printing the results a consolidated member is now printed once with an indication of the individual members it includes.

Basic concepts of bending about strong and weak axis.

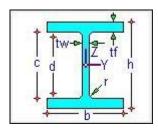
What does the corresponding bending length ly and lz mean:

It is recalled that, in general, in double-tau metallic cross-sections, the local axis

• y-y is the strong, and the

• z-z the patient,

as shown below:

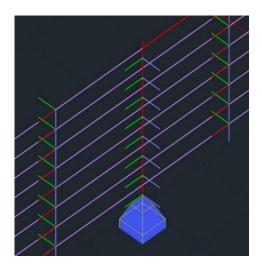




For the example, we will look at the bending lengths of the following post connected laterally to the thwarts. We will first look at the initial bending lengths Ly and Lz for the post.



The times of the local axes of the pole and the thimbles are as follows:



Bending of the **pole** about its local **strong y-y** axis (green) means:

• the buckling caused by the moment My (rotation about the y-y axis), i.e. out-of-plane buckling, which in the particular case, the unified, i.e. the total length of the post shall be taken as the buckling length.

In the other direction, bending the pole about its local weak z-z axis (blue) means:

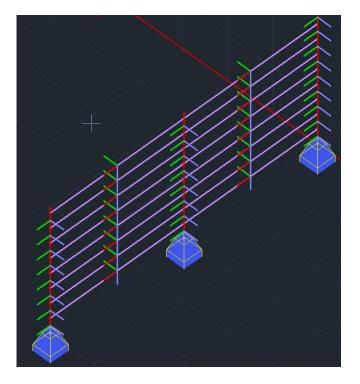
• the bending caused by the torque Mz (rotation about the z-z axis), i.e. bending in-plane, the post is considered to be supported laterally by the thwarts and thus the bending length Lz will be taken as the length of each member.

• NOTE

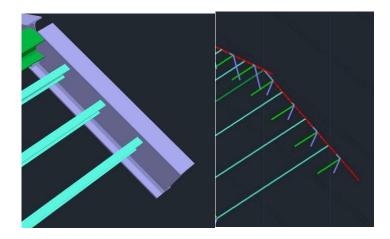
As a general rule, we could say that, we obtain **unified Ly length** in

direction where the local y-y axis is parallel to the elements supporting - securing the member, while in the other direction, if there are no elements, **the individual lengths** are taken as **Lz**.

In the same example and with regard to the thymus:



The supports from the poles are parallel to the local z-z axis (blue, out of plane) of the thimbles. So, the <u>consolidation will be done in Lz</u> (full length), while for the y-y direction (green, in-plane) <u>the length of each member will</u> be taken as <u>Ly</u>. Similarly for the following **inclined beam**:



The local axis of the beam parallel to the tesserae is y-y. Therefore, <u>Ly will be taken as the</u> <u>unified</u> of the whole beam, while <u>Lz</u> will be <u>taken</u> as <u>the individual lengths</u>.

The consolidation command group includes the following commands:



The logic of the consolidation methodology is that, either automatically or manually, the individual members of an element are consolidated by bending direction.

The buckling length taken for calculation purposes is not the actual length of the member, but the unified length from the beginning to the end of the column or beam respectively.

In addition, in the presentation of the results, for these consolidated members the worst controls are shown only once and not for each one as was the case until now.

Finally, in automatic consolidation, there is the definition of stop levels.

<u>Break planes</u> are horizontal or vertical planes that are used as breakpoints in the consolidation of a continuous element.

For example, for vertical elements (Pillars) the stop levels are horizontal planes which are defined, like the levels, with an altitude.

OBSERVATION

It is good to work with the commands in the 3d mathematical model and have the commands displayed in the

local axes.

1.4.1. Automatic Consolidation

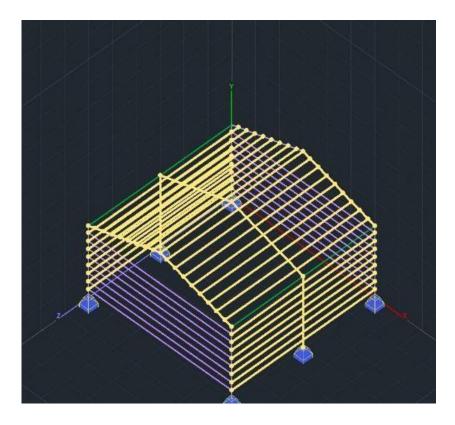
υτόμ	ιατη	η Ενοποίη	ση	>	×
Laye	r	Μεταλ.Υπ	οστυλώματα	~	1
Στύ/	0		~	Υπολογισμός	
Eni	πεδα	ι Διακο <mark>π</mark> ής			
	67. 300	0.00			

Using this command displays the following dialog box

In the upper field you select the layer of the elements you want to consolidate. The

Consolidated members are displayed in colors on the screen.

- The y-y consolidated local data are shown in yellow.
- In cyan colour the z-z consolidated local
- In pink are the consolidated along both axes



Right below you specify the type of element contained in the selected layer. The program automatically understands the type of element if it is vertical (Pillars) and all other elements are Beams.

With the "**Calculate**" command the program consolidates the data of the specific layer based on the above mentioned.

The next section deals with the definition and processing of stop levels.

Interruption levels are levels that are boundaries of the beams and poles where you want the integration for either one or the other direction to be interrupted.

- For poles, the stopping levels are horizontal levels defined by the altitude.
- For beams, the stop planes are always vertical planes defined by two points.

Predefined limits:

- for the horizontal planes the horizontal planes are the foundation level and the upper last level (the last level).
- and for the beams are the vertical limits of the girder.
- The default limits are not shown in the table of cut-off levels.



For example, in a building with levels at 0.00, 300.00 and 600.00, the table with the cut-off levels for the poles will by default show only the 300.00 level (i.e. only the intermediate level without the limits),

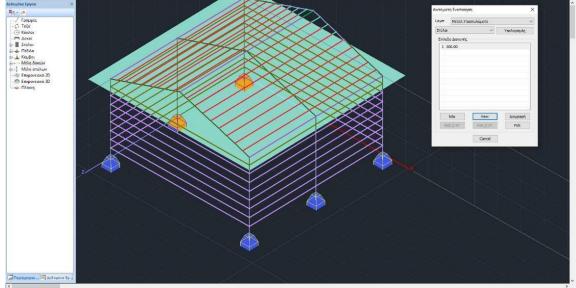
ayer	Μεταλ.Υπ	οστυλώματα	
Στύλοι		~	Υπολογισμός
Enined	δα Διακο <mark>π</mark> ής		
1 3	00.00		
	Néo	View	Διαγραφή
Pie	Néo dk // XY	View Pick // ZY	Διαγραφή Pick

on the grounds that if the poles are consolidated, this will be interrupted at 300.00 cm, i.e. the pole from 0.00 to 300.00 cm and the pole of the other floor from 300.00 to 600.00 cm.

• To set your own cut-off level for **PENS**:

you select the "**New**" button and then with the "**Pick**" command you point to a point. The horizontal plane defining the altitude of this point is a stopping level.

With the "View" command and the layer selected from the list, you can display it in the vector



Finally with the "Delete" command you can delete an interrupt level.

• Regarding the DOKUS:

the definition of vertical stop levels is done in the same way, but here with "**Pick**" you define two points, i.e. a line defining a vertical stopping plane.

Αυτόματη Ενοποίηση × Layer Μετολ.Δοκοί ✓ Δακοί ✓ Υπολογισμός			
Δοκοί Υπολογισμός Επίπεδα Διακοπής		HII A A A	
1 600.00,300.00,600.00 600.00,300.00,0.00			
			H
			X
Néo View Διαγραφή Pick // XY Pick // ZY Pick	2		
Cancel			

For example in the following picture

the stopping level of the front and rear plinths is defined as the boundary of the two buildings.

• Especially for the beams, and when the stop levels you want to set are parallel to Global XY or ZY, you select the corresponding button and you now set only one point.



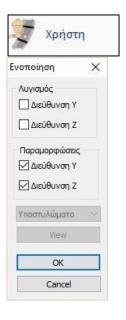
For beam and post break levels the *correction* can be done in two ways.

- Either by deletion and appointment of a new one,
- either by selecting the corresponding level and redefining with a pick point or points.

1.4.2. User Consolidation

Select the command and then point to the start and end points of the members you want to consolidate.

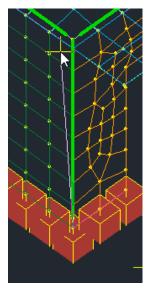
Selecting the second point (end point) displays the following dialog box:



where you set the direction of unification for Bending and Deformation.

1.4.5. Consolidation of concrete columns

This command is mainly used in masonry buildings with vertical reinforced concrete elements that connect the nodes of the surface nodes and that need to be consolidated in order to be dimensioned.



Select the command and then point to the start and end points of the members you want to consolidate.

1.4.5. Show

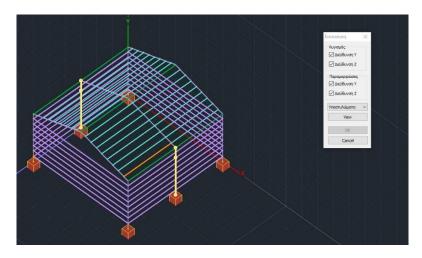
By selecting the Show command, you can see which elements have been consolidated based on the colours mentioned above.

The following dialog box appears:

νοποίηση	×
Λυγισμός	
🗹 Διεύθυνση	Y
🗹 Διεύθυνση	z
Παραμορφώσε	εις
Διεύθυνση ΄	Y
Διεύθυνση	z
Υποστυλώματα	
View	
OK	
Cancel	

The use of the mask is simple:

- Select the type of item you want to view from the list, and then
- click type (Bending Deformations) and direction you want to see which data are consolidated.



1.4.6. Correction

The "Correct" command allows you to correct items that have already been consolidated. By using the command and selecting any member that belongs to consolidated member, the following dialog box appears:

νοποίηση	×
Λυγισμός	
🗹 Διεύθυνση 👌	r
Διεύθυνση 2	z
Παραμορφώσε	ις
🛛 Διεύθυνση 🗎	r
🗹 Διεύθυνση 2	Z
Υποστυλώματα	
View	
ОК	
Cancel	

where the corresponding fields that you have consolidated appear checked. Here you can modify the consolidation options based on direction and type. With the View option you can view the member with the corresponding color of the consolidation.

• ATTENTION

With this command you must select a member that has already been consolidated. If you select a else the dialogue box will not open.





Command to selectively delete a consolidation. You select the command and then click any member that belongs to consolidated one. Then rightclick to delete the consolidation.

1.4.8. Total deletion



Command to delete all consolidations of your organization in total. Command useful if you want to define the consolidations from the start

2. Member Charts

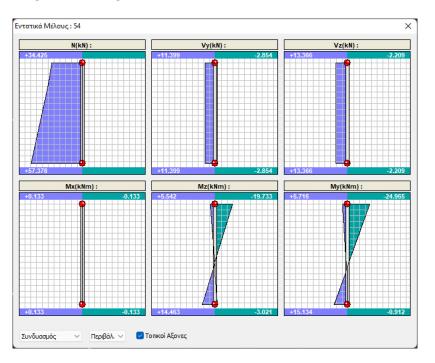
Διαγράμματα Μέλους
🛀 Πίνακας Min-Max Εντατικών
Μετατοπίσεις Κόμβου
Εντατικά Επιφανειακού
📚 Διαγράμματα Πλακών
κατη γορία - Υλικό Δοκών
🐇 Κατηγορία - Υλικό Στύλων

2.1 Member Charts

Διαγράμματα Μέλους

Command to display the member charts.

Select the command and point to a member with the mouse. In the dialog box that opens, all the diagrams of the intensive magnitudes of that member are displayed. Select a combination or load and move the mouse within the frame of the diagrams to read the corresponding values of the intensive magnitudes along the member.



OBSERVATIONS:

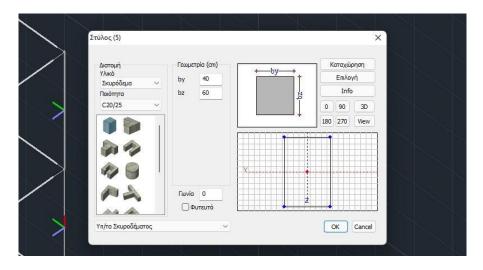
1. A new check has been added to the display of the column-wall diagrams, by unchecking which the diagrams of the intensities are converted from the local axes (as derived from analysis results) to the axes of the dimensioning. The dimensioning axes are in fact the axes for beta=0 and positioning angle=0

In order for all columns - walls to have common reference axes for their stresses and reinforcement, the dimensioning is done with respect to the dimensioning axes (these are the axes for angle beta = 0 and placement angle 0). The system of dimensioning axes has a rotation with respect to the local system of each member by <u>angle Beta minus the placement angle of the element</u>. Thus, for a member with angle beta = 0 and angle of emplacement = 0, the local axes and the dimensioning axes coincide.

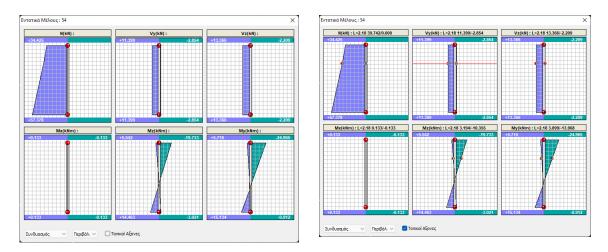
Recall that when a column is placed with a placement angle other than zero, the corresponding linear element created has a <u>beta angle equal to the placement angle</u>.

EXAMPLE for local axes

Mounting angle 0, angle beta=0 In the image below

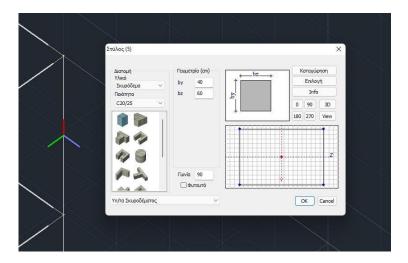


The upper post is inserted with a **mounting angle of 0 and therefore an angle beta=0**. Thus, its local axes are the same as the dimensioning axes. In the diagrams of the element's stresses, the diagrams on the local axes therefore coincide with the diagrams of the dimensioning

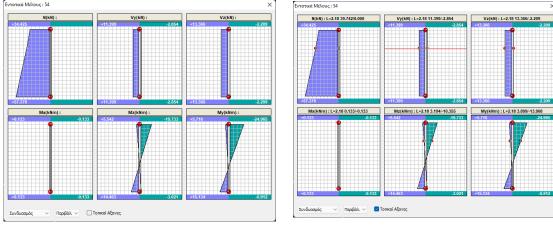


Mounting angle 90, angle beta=90

If the same element is now placed at a 90 degree placement angle, (beta angle 90 degrees), the local axes are these (turn counterclockwise)

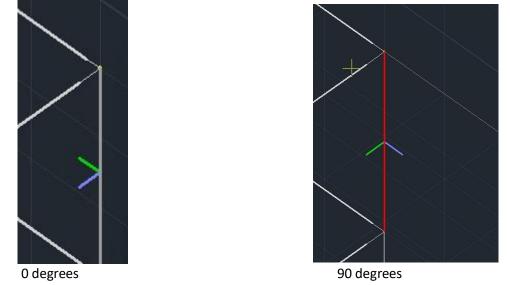


The situation will not change because the rotation angle (beta angle - mounting angle) is 0, the dimensioning axes coincide with the local axes and so the diagrams are again the same.

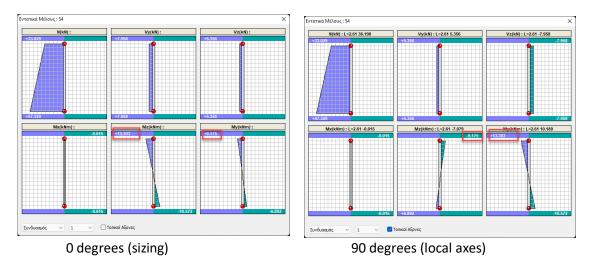


Ex-post change of beta angle

If finally the beta angle is changed afterwards from 0 degrees to 90 degrees (counter-rotation),



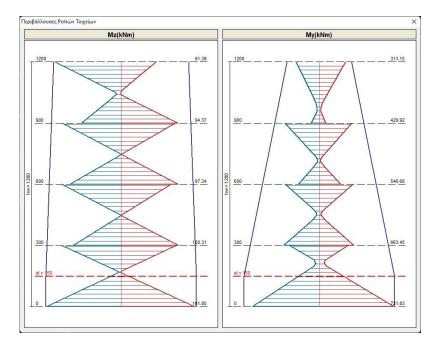
the dimensioning axes are now twisted by -90 degrees, i.e. they are in the 0 degree state. So the dimensioning torque My(0) is equal to -Mz(90) of the local and the torque Mz(0) sizing is equal to My(90) of local.



My(0)=-Mz(90)= 9.175 =-(-9.175) Mz(0)=My(90)=13.3 2. The new version of SCADA Pro has incorporated the design procedure of the normative envelope of the bending moment according to paragraph 5.4.2.4(4,5) of EC8 for the satisfactory design of walls. In particular, in the dialogue box of the diagrams in the dimensioning and when the element is a wall, the option "Wall Moment Envelopes" is displayed



which displays the following image



the envelope shall be plotted vertically for the whole wall and at each level a torque value per direction shall be calculated which is the largest absolute value of the corresponding positive and negative values.

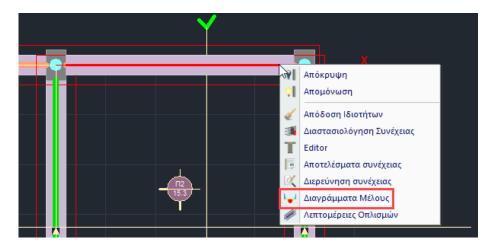
For example, in the graph above:

The two blue outer lines on either side are the envelopes and the "sawtooth" diagrams are the original envelopes.

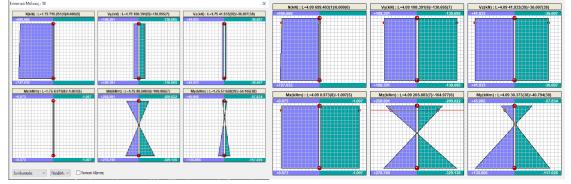
For level 1 (300) the value of Mz to be considered is Mz=100.31 kNm and the torque of My=663.45 kNm.

Finally, in the section on the investigation of the results, the values calculated and taken into account are listed in detail and by combination.

3. Right-clicking on the member opens a list of commands that includes the Member Diagrams command.



4. By double-clicking on a diagram, each diagram will be enlarged to show its shape clearly.



2.2 Table Min-Max Intensives



You can now see the diagrams with the Min-Max intensive

sizes in tabular form.

Pressing the command displays the following communication window

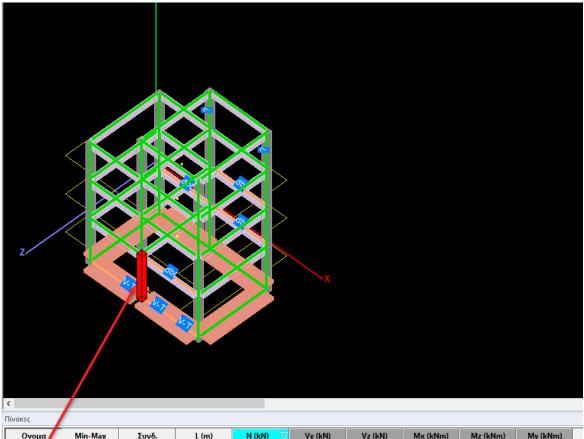
Min - Max Εντατικώ	v	×
Είδος μέλους	Υποστυλώματα	\sim
Επιλογή Εντατικού	Ν	\sim
ОК	Cancel	

to view the intensives, as well as the (initial) intensive size you wish to investigate.

		· ·						0	
Ονομα	Min-Max	Συνδ.	L (m)	N (kN) 🛛	Vy (kN)	Vz (kN)	Mx (kNm)	Mz (kNm)	My (kNm)
11	Max	1	0.0000	1214.4580	64.0065	15.6819	1.2453	129.6775	37.7756
11	Min	1	3.6000	1195.0180	64.0065	15.6819	1.2453	98.2310	68.2419
12	Max	1	0.0000	943.8152	34.3001	64.8409	1.2453	59.0216	162.0816
12	Min	1	3.6000	924.3752	34.3001	64.8409	1.2453	66.8870	81.3490
8	Max	1	0.0000	854.2269	54.7029	32.0265	1.2453	112.4745	48.1420
8	Min	1	3.6000	834.7869	54.7029	32.0265	1.2453	78.2952	19.8092
24	Max	1	0.0000	826.6706	52.3440	3.9750	1.2316	75.1374	0.0000
24	Min	1	3.0000	810.4706	52,3440	3.9750	1,2316	96.0096	88.8653

Apart from the initial selection of intensive size you are exploring, you are given the option to tap on any intensive size and it will display - first in ascending order (by tapping once) or descending order (by tapping twice) - the list of the corresponding members and their intensities.

Each member selection from the list is also visible in the model for the best possible overview.



Ονομα	Min-Max	Συνδ.	L (m)	N (kN) 🛛 🗸	Vy (kN)	Vz (kN)	Mx (kNm)	Mz (kNm)	My (kNm)
11	Max	1	0.0000	1214.4580	64.0065	15.6819	1.2453	129.6775	37.7756
11 3	Min	1	3.6000	1195.0180	64.0065	15.6819	1.2453	98.2310	68.2419
12	Max	1	0.0000	943.8152	34.3001	64.8409	1.2453	59.0216	162.0816
12	Min	1	3.6000	924.3752	34.3001	64.8409	1.2453	66.8870	81.3490
8	Max	1	0.0000	854.2269	54.7029	32.0265	1.2453	112.4745	48.1420
8	Min	1	3.6000	834.7869	54.7029	32.0265	1.2453	78.2952	19.8092
24	Max	1	0.0000	826.6706	52.3440	3.9750	1.2316	75.1374	0.0000
24	Min	1	3.0000	810.4706	52,3440	3.9750	1.2316	96.0096	88.8653

2.3 Node displacements



It is now possible to see the displacements of the

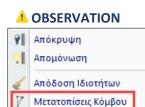
nodes.

Select the command and point to a node with the mouse. In the dialog box that opens, all moves of that node are displayed. Select a combination or a charge to read the corresponding values of the movements.

Μετακινήσεις	Κόμβου : 718		\times
Συντεταγμέν	ες : 1000.00,300	.00,0.00	
Dx(mm)	0.0000]
Dy(mm)	-0.9158	3	
Dz(mm)	0.0000		
Rx(rad)	0.0001		
Ry(rad)	0.0000		
Rz(rad)	0.0001		
			_
Φόρτιση	~	1 ~	
Μέγισ	τες Τιμές	Εξοδος	

Select Maximum Values to see the maximum value for each move and turn, the combination from which it comes. The number of that combination is shown in brackets next to the value.

Dx(mm)	0.4964(3)
Dy(mm)	-0.9158(1)
Dz(mm)	0.3096(4)
Rx(rad)	0.0001(4)
Ry(rad)	0.0000(9)
Rz(rad)	0.0001(1)



Right-clicking on the node opens a list of commands that includes the Node Shift command.

2.4 Intensive Surface



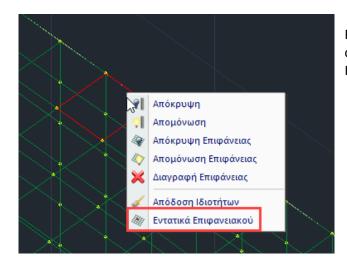
It is now possible to view the intensities of the surface elements.

Select the command and point to a surface element with the mouse. The dialog box that opens displays all the trends and moments for that surface element. Select a combination or load to read the corresponding values of the stresses and moments.

Ένταση Επιφανε	ακού : 271	×
Κόμβοι : 1007 ,	1032 , 1000 , 97	76
σXX(kN/m2)	222.2500	
σYY(kN/m2)	345.6250	
σXY(kN/m2)	-772.8750	
MXX(kNm/m)	1.3547	
MYY(kNm/m)	2.9019	
MXY(kNm/m)	47.5598	
Φόρτιση	\sim	1 ~
Μέγιστες	; Τιμές	Εξοδος

Select Maximum Values to see the maximum value for each voltage and torque, and the combination from which it is derived. The number of this combination is shown in brackets next to the value.

OBSERVATION



Right-clicking on the node opens a list of commands that includes the Surface Intensity command.

Similarly, if the element is solid, by selecting "Surface Intensities" and pointing to the element, its 6 trends are displayed in the following window:

	Face 0	Face 1	Face 2	Face 3	Face 4	Face 5	Face 6
σXX(kN/m2)	-1.9084	-1.9288	-1.8880	-1.9027	-1.9141	-1.1848	-2.6320
σYY(kN/m2)	-29.5794	-29.3450	-29.8138	-29.5523	-29.6065	-29.5796	-29.5793
σZZ(kN/m2)	-0.0000	-0.0000	-0.0000	0.0000	-0.0000	-0.0000	0.0000
σXY(kN/m2)	-0.4934	-0.5147	-0.4720	-0.7837	-0.2030	-0.5027	-0.4841
σYZ(kN/m2))	0.0154	0.0154	0.0154	0.0158	0.0151	-0.0736	0.1044
σZX(kN/m2)	-0.0014	-0.0014	-0.0014	-0.0093	0.0066	-0.0009	-0.0018
c							2

OBSERVATION:

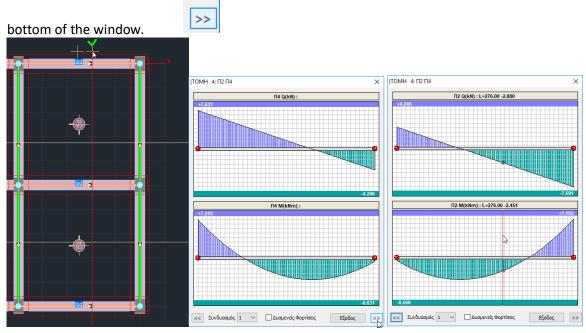
In the current version of the program, the results given by the solid data are those mentioned above. In the next version, planning and valuation will be integrated.

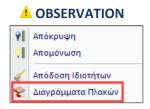
2.5 Plate diagrams

 Διαγράμματα Πλακών It is

It is now possible to see the diagrams of the cross-sections of the plates. Select the command and point to an intersection with the mouse. In the dialog box that opens, all the diagrams of intensive magnitudes per facet are displayed. Again select a combination or a loading and move the mouse within the width of the diagrams to read the corresponding values of the intensive magnitudes along the section. On

in cases of unfavourable loads, activate the resulting diagrams. Go to the next panel with the arrows on the





Right-clicking on the intersection opens a list of commands that includes the Plate Diagrams command.

2.6 Category - Beam Material / Pillar Material

Writing the characteristics of the material on the elements

The new version of SCADA Pro gives you the ability to see on the members (Beams - Columns) the characteristics of the material that has been used, as well as an indication whether the material is a New Member or an Existing Member.

Simply select the command for the Beams and/or the Poles. The indications are shown separately for Beams and Columns.

