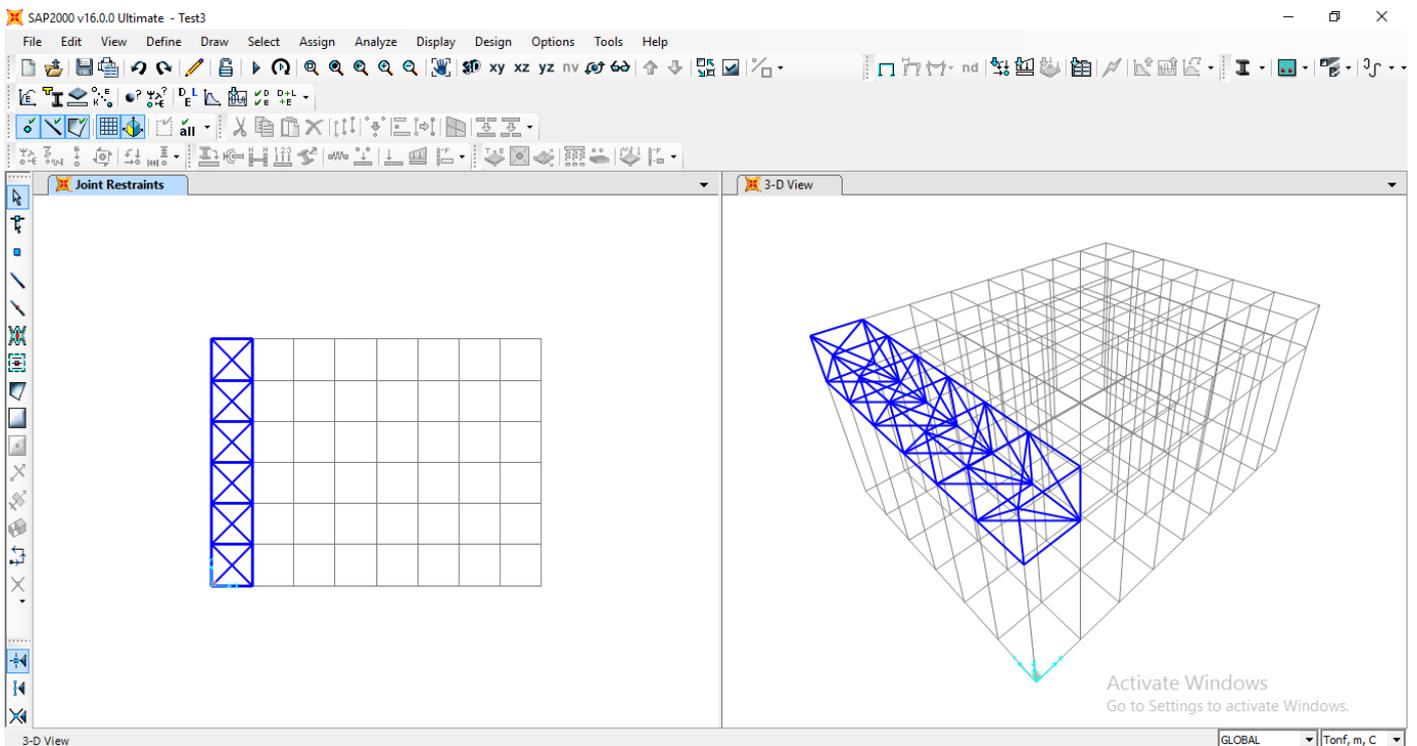
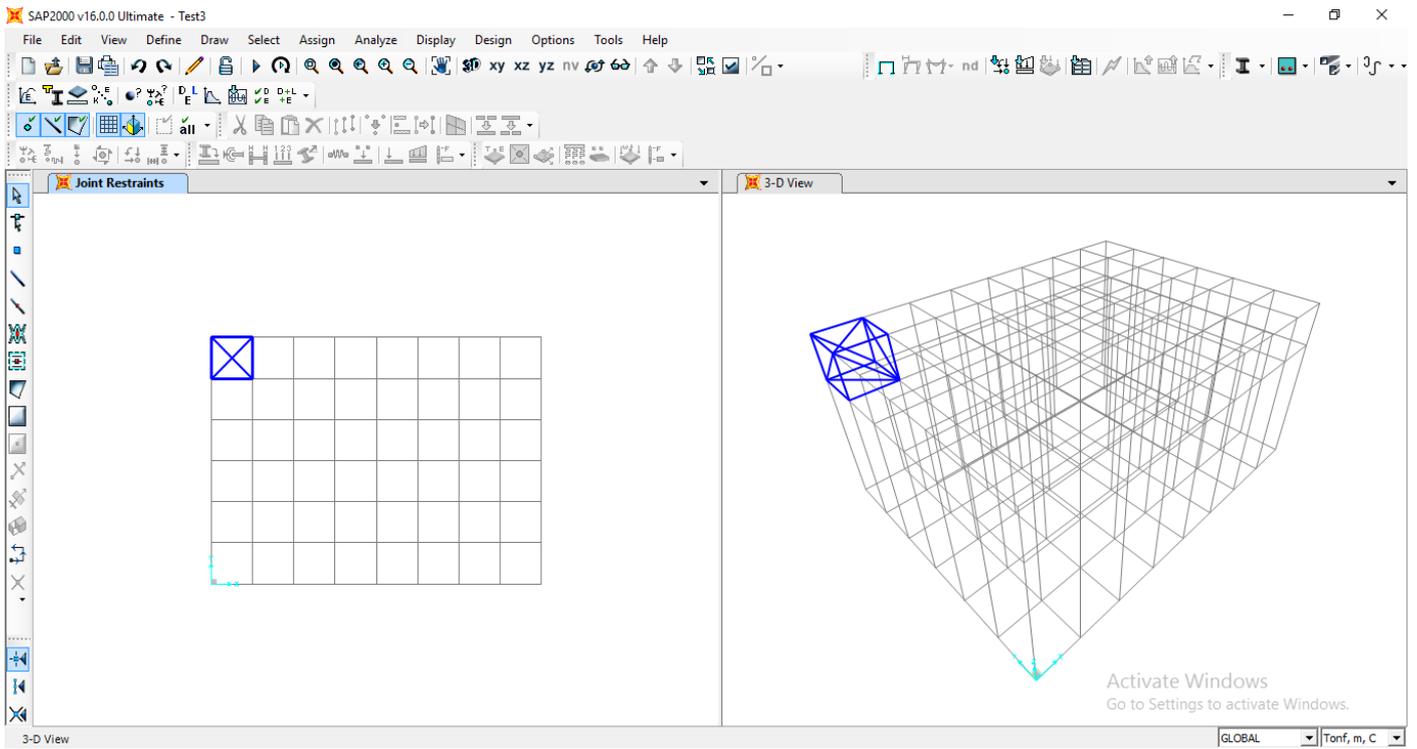
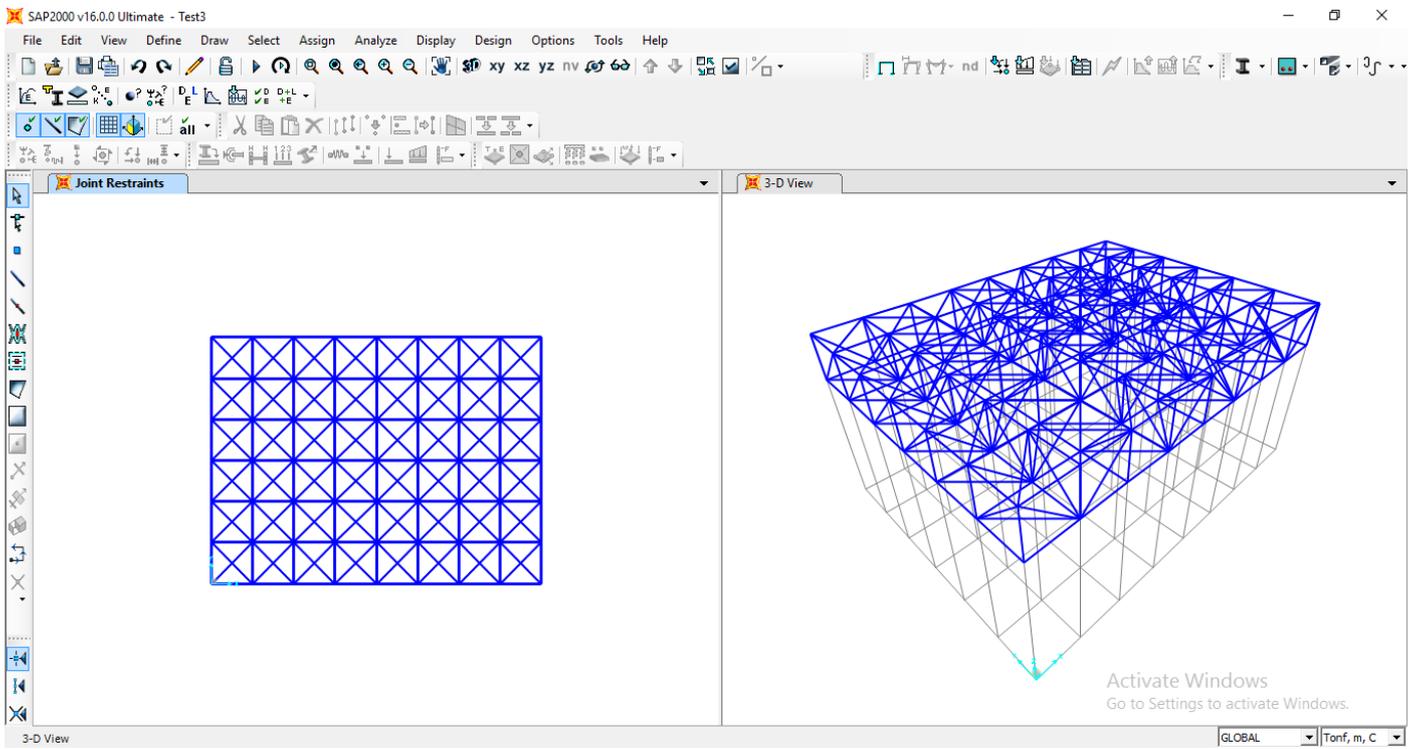


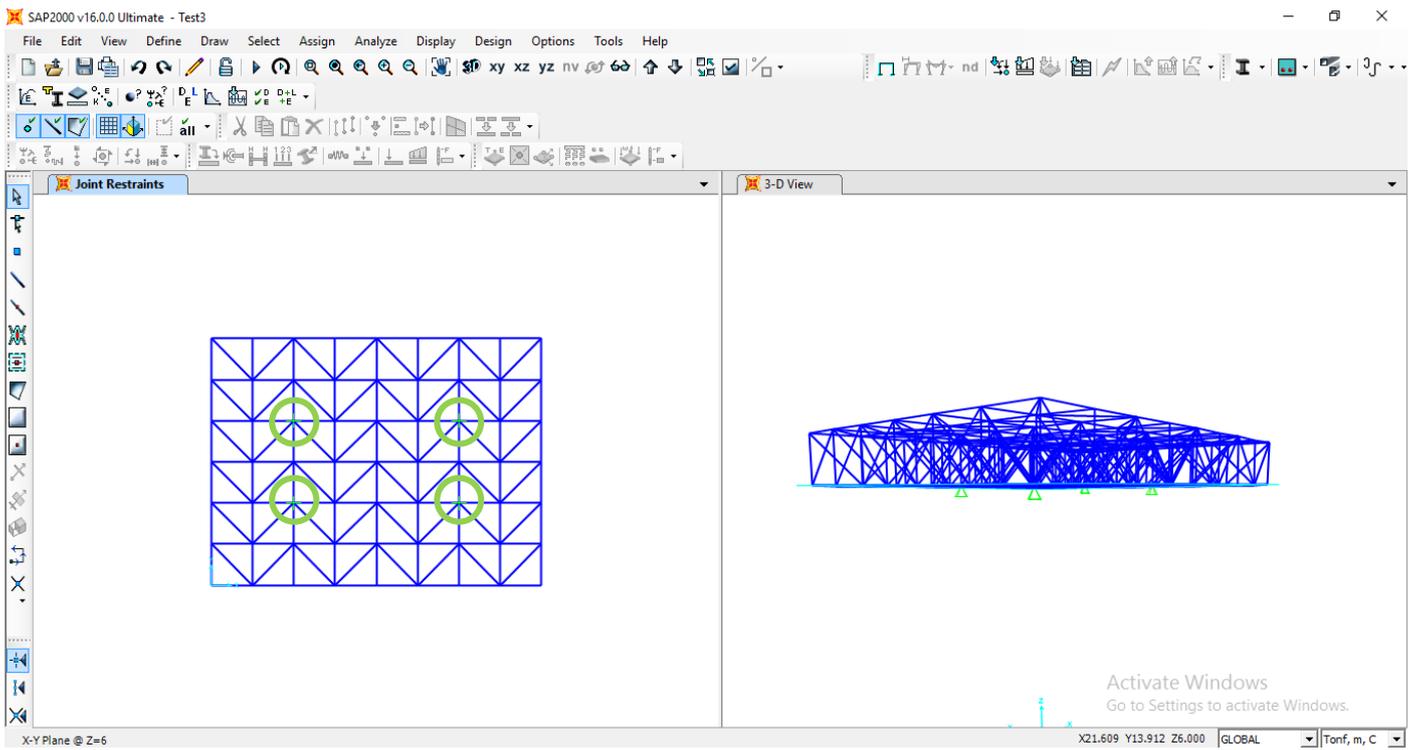
Esercitazione 1

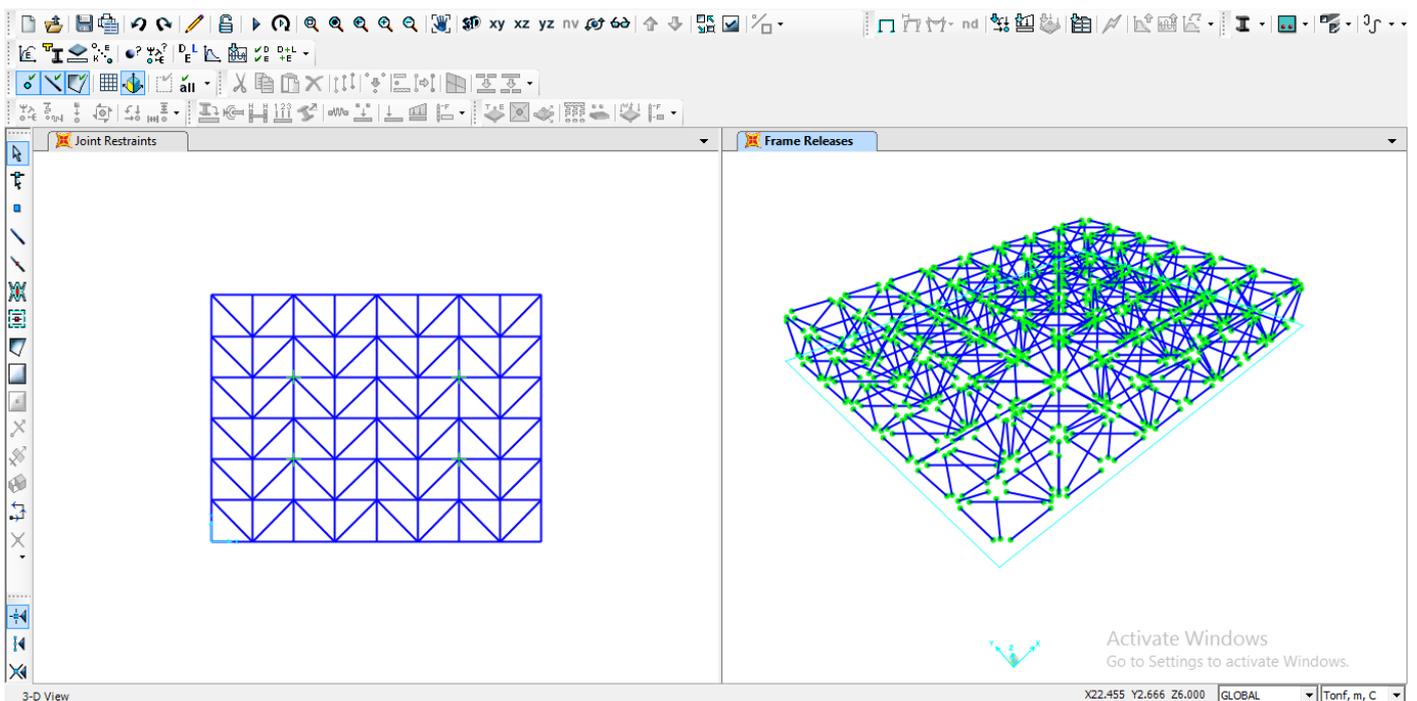
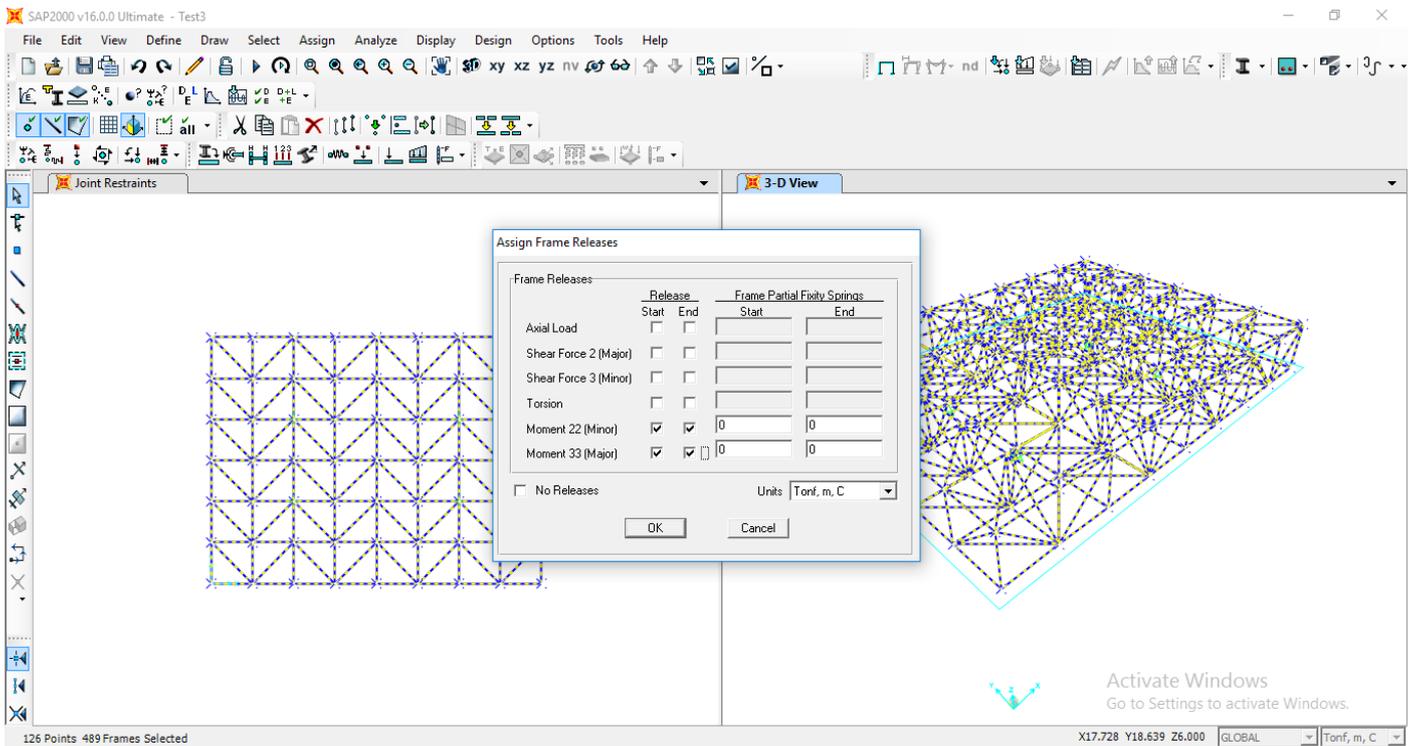
La travatura spaziale è formata da moduli di (2x2x2) m su una superficie di (12x16) m per un edificio di 2 piani





Dopo la costruzione aggiungere le cerniere





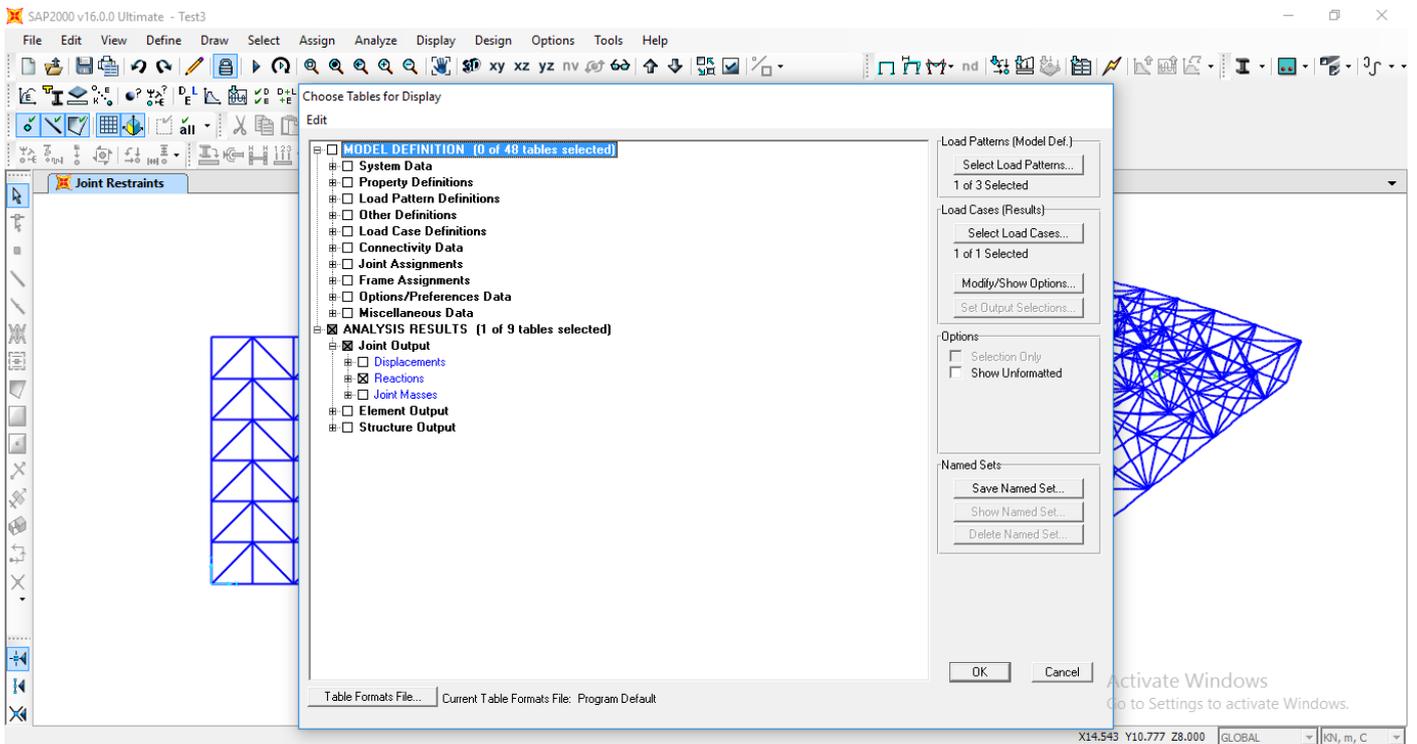
Calcolare il peso proprio

Peso piano: $192 \text{ m}^2 \times 10 \text{ KN/m}^2 = 1920 \text{ KN} \times 2 \text{ piani} = 3840 \text{ KN} + 257,604 \text{ KN}$ (peso proprio struttura) = $4097,604 \text{ KN}$

Divido per l'area per avere il valore del carico al M_q : $4097,604 \text{ KN} / 192 \text{ m}^2 = 21,34 \text{ KN/m}^2$

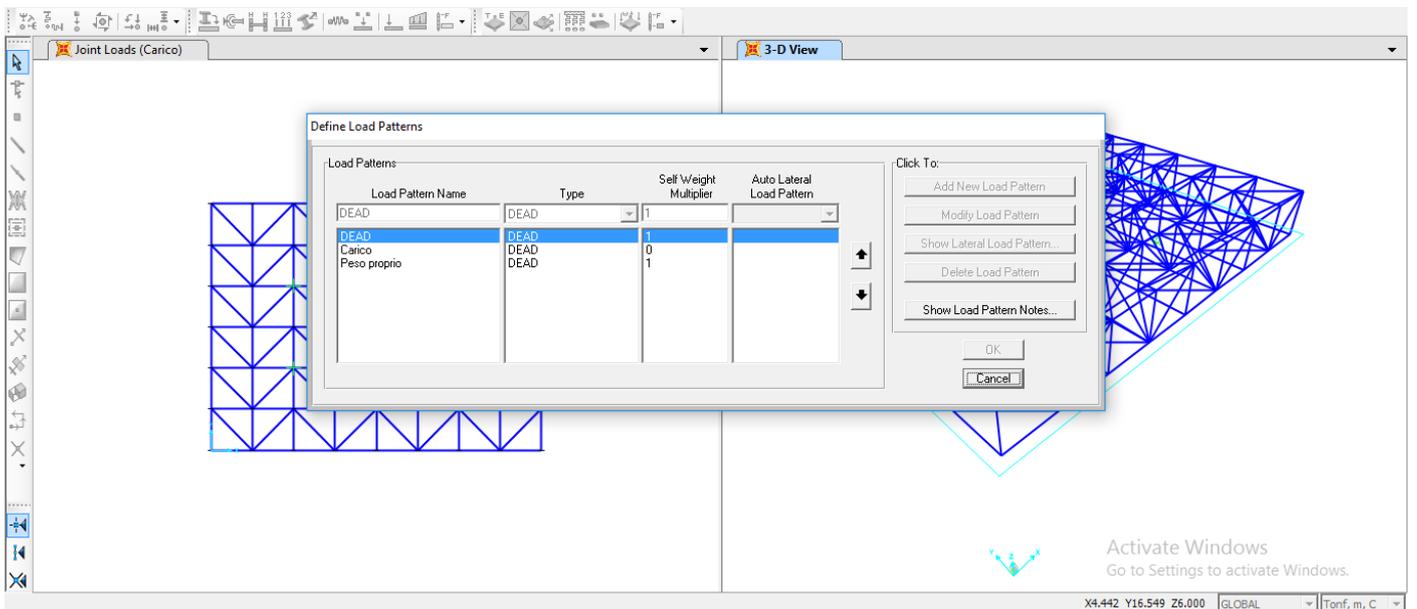
Ovviamente non tutti i nodi saranno sollecitati allo stesso modo, posso dividerli in 3 macro categorie:

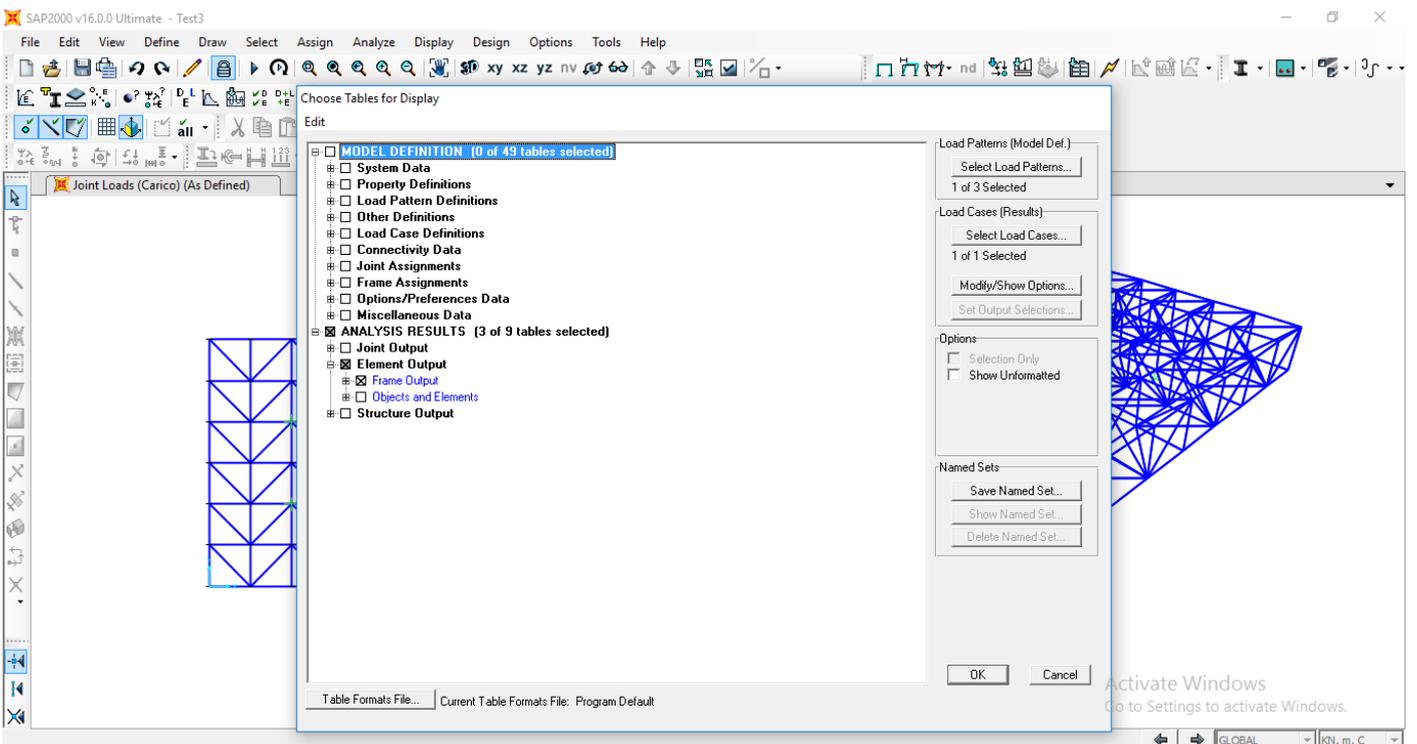
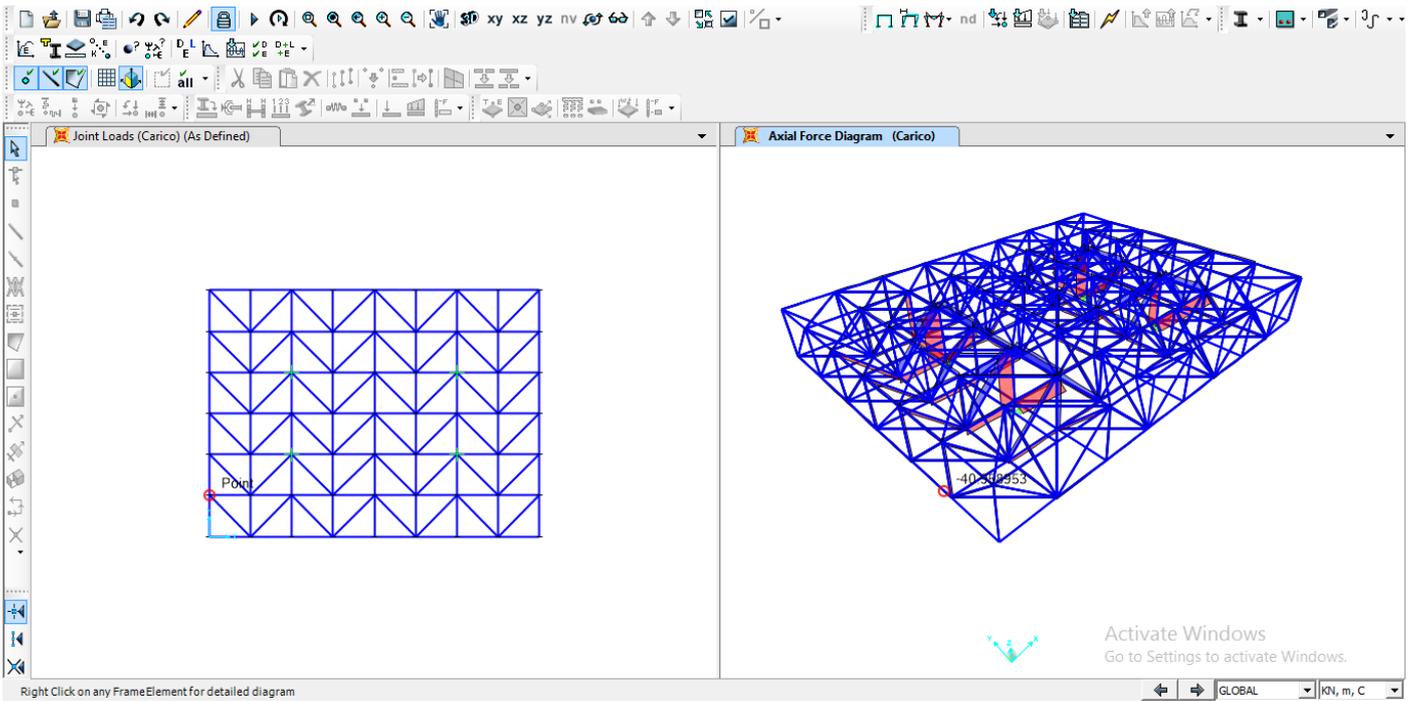
- Nodi Centrali $\rightarrow 21,34 \text{ KN/m}^2 \times 4,00 \text{ m}^2 = 85,36 \text{ KN}$
- Nodi Perimetrali $\rightarrow 21,34 \text{ KN/m}^2 \times 2,00 \text{ m}^2 = 42,68 \text{ KN}$
- Nodi Angolari $\rightarrow 21,34 \text{ KN/m}^2 \times 1,00 \text{ m}^2 = 31,41 \text{ KN}$



Excel (Product Activation Failed)

	L	K	J	I	H	G	F	E	D	C	B	A	
													TABLE: J
				M3	M2	M1	F3	F2	F1	CaseType	OutputCase	Joint	1
				KN-m	KN-m	KN-m	KN	KN	KN	Text	Text	Text	2
				0	0	0	64.401	19.499	-15.831	LinStatic	Peso proprio	74	4
				0	0	0	64.401	19.499	15.831	LinStatic	Peso proprio	84	5
				0	0	0	64.401	-19.499	-15.083	LinStatic	Peso proprio	110	6
				0	0	0	64.401	-19.499	15.083	LinStatic	Peso proprio	120	7
							257.604						8
													9





Element Forces - Excel (Product Activation Failed)

Elem	Station	Frame	Elem	M3	M2	T	V3	V2	P	CaseType	OutputCase	Station	Frame
0	245-1		0	0	0	0	0	0	-729.764	LinStatic	Carico	0	245
2.82843	645-1		0	0	0	0	0	0	-488.422	LinStatic	Carico	2.82843	645
0	230-1		0	0	0	0	0	0	-314.339	LinStatic	Carico	0	230
0	366-1		0	0	0	0	0	0	-177.871	LinStatic	Carico	0	366
0	365-1		0	0	0	0	0	0	-135.491	LinStatic	Carico	0	365
0	262-1		0	0	0	0	0	0	140.932	LinStatic	Carico	0	262
0	362-1		0	0	0	0	0	0	189.542	LinStatic	Carico	0	362
2.82843	318-1		0	0	0	0	0	0	387.739	LinStatic	Carico	2.82843	318
m	Text		KN-m	KN-m	KN-m	KN	KN	KN	KN	Text	Text	m	Text

acciaio asta reticolare [Compatibility Mode] - Excel (Product Activation Failed)

Calcolo dell'area minima da sforzo di compressione (resistenza materiale)					Calcolo dell'inerzia minima per sforzo di compressione (instabilità euleriana)						Ingegnerezazione sezione e verifica snellezza per una membratura principale (< 200)			
N	fyk	γ m0	fyd	A_min	E	beta	I	Lam*	rho_min	I_min	A_design	I_design	rho_min	lam
kN	N/mm2		N/mm2	cm2	Mpa		m		cm	cm4	cm2	cm4	cm	
-729.764	235.00	1.05	223.81	32.61	210000.00	1.00	3.00	96.23	3.12	317	38.8	616	3.98	75.38
-314.339	235.00	1.05	223.81	14.04	210000.00	1.00	4.00	96.23	4.16	243	53.8	1340	4.98	80.32
-135.491	235.00	1.05	223.81	6.05	210000.00	1.00	5.00	96.23	5.20	163	76.8	2770	6.00	83.33
140.932	235.00	1.05	223.81	6.30	210000.00	1.00	5.00	96.23	5.20	170	76.8	2770	6.00	83.33
387.739	235.00	1.05	223.81	17.32	210000.00	1.00	5.00	96.23	5.20	468	76.8	2770	6.00	83.33

Tese -		Comprese +			
Forze (N)	Area min	Forze (N)	Area min	Inerzia min	Rho min
-729.764 >> -488.422	33,60	+387.739 >> +189.542	20,60	697,0	5,810
-314.339 >> -177.871	15,50	+140.932 >> 0	16,60	566,0	5,840
-135.491 >> 0	6,670				