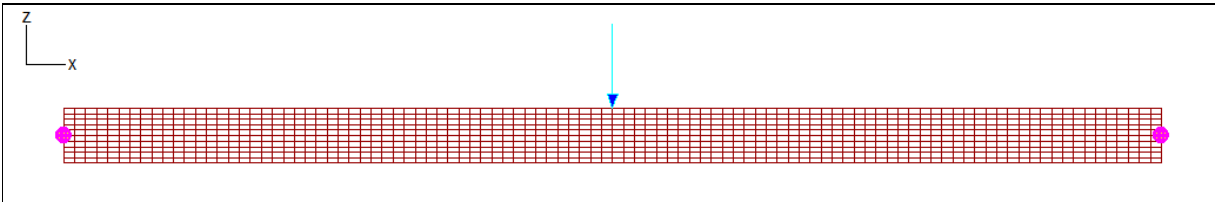


Validation of Sargon Nonlinear solver (CURAN, version 9.70)			
TEST MB035	VALIDATION, CROSS CHECKS, RELIABILITY, BENCHMARK	Marco Croci	Rev.1-06/04/2011



Test description
Constitutive law of membranes material: elastic-perfectly plastic. When limit load is exceeded there is a collapse.
Test model: curanMB_035.WSR

Material properties			
Name	ν	f_y	E
S235PP	0,3	235N/mm ²	210000N/mm ²

Beam			Constraints		Load (z direction)	
LENGTH L	HEIGHT h	THICKNESS b	LEFT	RIGHT	APPLICATION POINT	FORCE F
10000mm	500mm	100mm	Simple support		Middle point	-1200000N

Model data			
Membrane elements		Type	d.o.f.
1000 (10x100)		QUAD4SRI	2218

CHECK

Theoretical limit load is $F_{lim} = b h^2 \cdot f_y / L = 587500N$. Load multiplier is $F_{lim} / F = 0,4896$

Load case	Value	Unit	CURAN	TARGET	KIND	% diff.
1	Load multiplier	/	5,068E-01	4,896E-01	theoretical	3,52

% difference = (CURAN - TARGET) / TARGET * 100

Precision of limit multiplier for the analysis: 0.005
QUAD4SRI: bilinear isoparametric element with selective integration