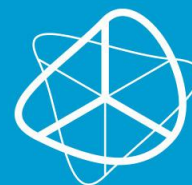


Debernardi T3 beam ATENA-C4A + ANSYS 2025R1

[1] ČERVENKA, V., ČERVENKA, J. A KADLEC, L. MODEL UNCERTAINTIES IN NUMERICAL SIMULATIONS OF REINFORCED CONCRETE STRUCTURES. *STRUCTURAL CONCRETE*. 2018, S. 1–18. DOI: 10.1002/SUCCO.201700287.

[2] Červenka J., Červenka V., Laserna S. On crack band model in finite element analysis of concrete fracture in engineering practice. *Engineering Fracture Mechanics*. 2018;197:27-47. <https://doi.org/10.1016/j.engfracmech.2018.04.010>



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DEBERNARDI T3

- Modelled as symmetric half of the beam

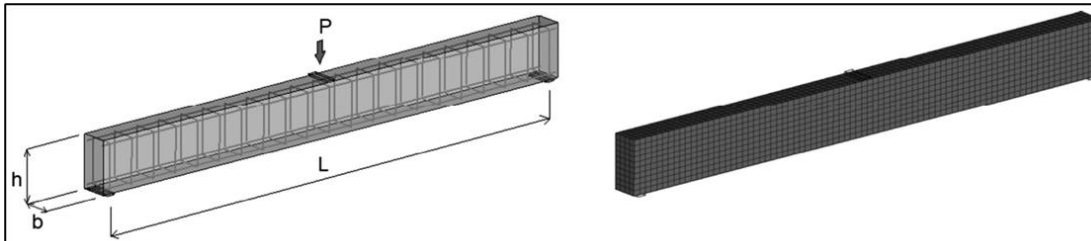
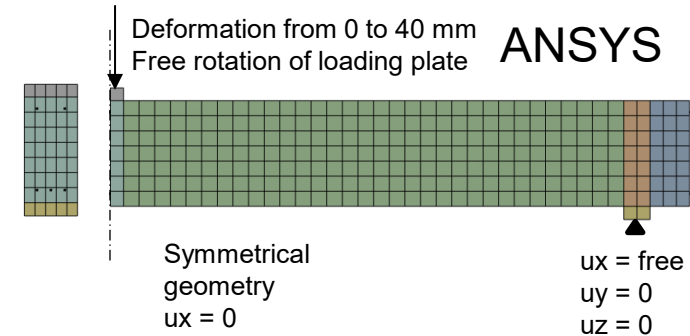
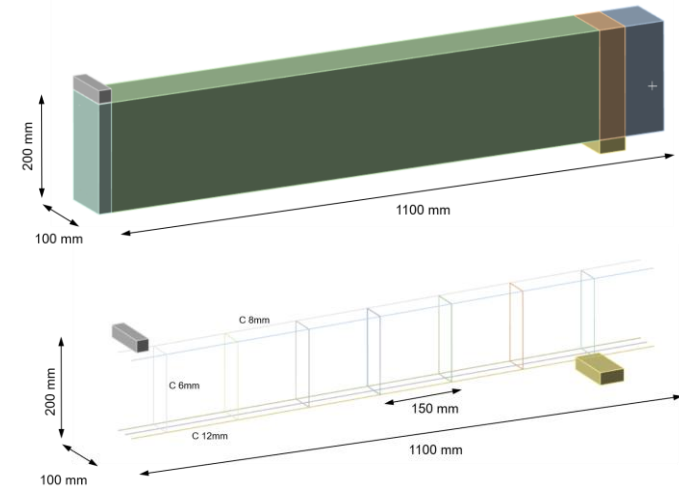


FIGURE 16 Beams tested by Debernardi and Taliano.¹⁸ Geometry (left), FE mesh (right)

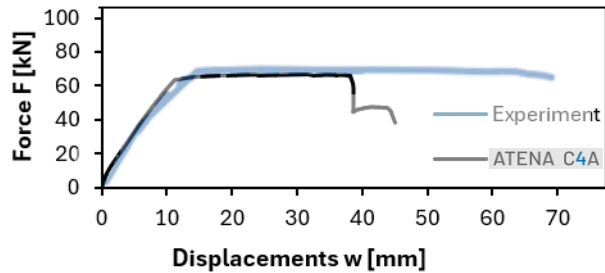
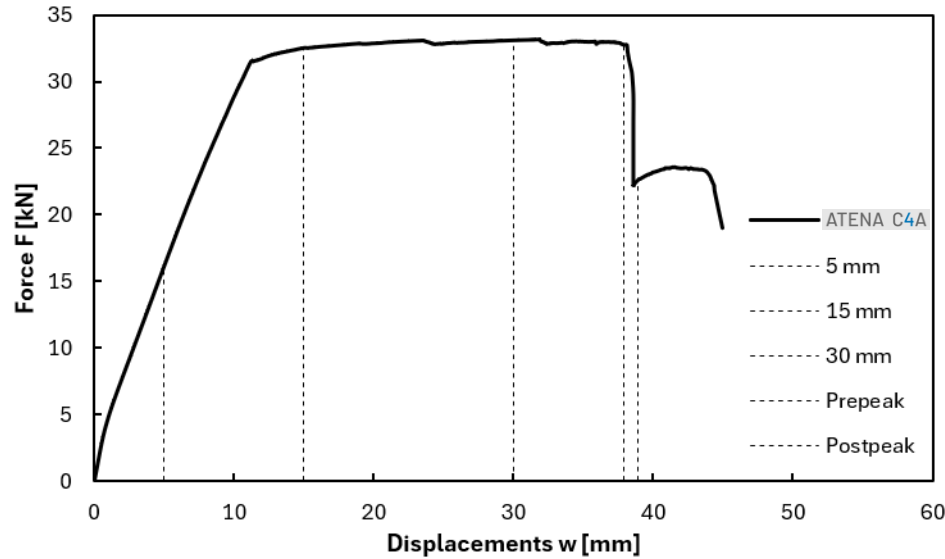
TABLE 5 Parameters of Debernardi beams

Slab	Span (mm)	h (mm)	b (mm)	Tens. Reinf.	ρ_b	Cover Tens.	Comp. Reinf.	Cover Comp.	Stirrups
T1	2000	200	100	1Ø12	0.0064	24	1Ø8	22	Ø6/150
T2	2000	200	100	2Ø12	0.0129	24	2Ø8	22	Ø6/150
T3	2000	200	100	3Ø12	0.0193	24	2Ø8	22	Ø6/150
T4	4,000	400	200	2Ø12	0.0051	35	2Ø10	45	Ø6/200
T5	4,000	400	200	4Ø12	0.0062	35	2Ø10	45	Ø6/200
T6	4,000	400	200	8Ø12	0.0126	40	2Ø10	45	Ø6/200
T7	4,000	400	200	12Ø12	0.0194	50	2Ø12	45	Ø6/200
T8	6,000	600	300	2Ø12	0.0013	35	2Ø12	70	Ø6/150
T9	6,000	600	300	4Ø12	0.0027	35	2Ø12	70	Ø6/150
T10	6,000	600	300	9Ø12	0.0060	35	2Ø12	70	Ø6/150
T11	6,000	600	300	18Ø12	0.0123	50	2Ø12	70	Ø6/150



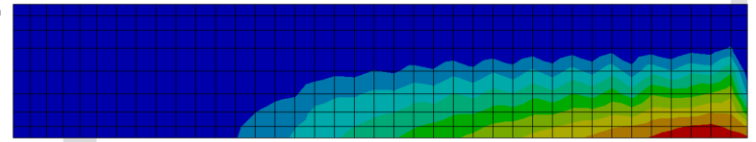
RESULTS

L-D diagram



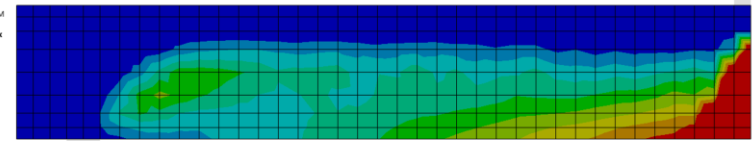
SVAR49 - Crack width for material direction X
Expression: SVARS0
Time: 5.5 s
7/16/2026 7:50:57 AM

4.9611e-5 Max
4.4103e-5
3.859e-5
3.3077e-5
2.7946e-5
2.2051e-5
1.6539e-5
1.1026e-5
5.5123e-6
0 Min



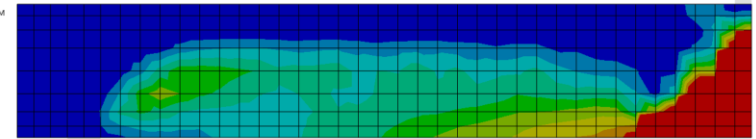
SVAR49 - Crack width for material direction X
Expression: SVARS0
Time: 15.5 s
7/16/2026 7:53:14 AM

0.00040503 Max
0.0001
8.75e-5
7.5e-5
6.25e-5
5e-5
3.75e-5
2.5e-5
1.25e-5
0 Min



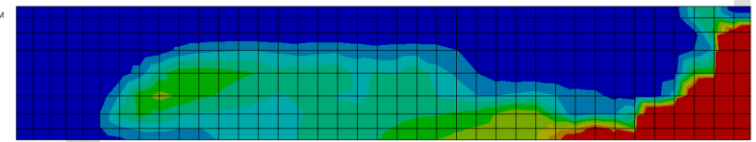
SVAR49 - Crack width for material direction X
Expression: SVARS0
Time: 38.5 s
7/16/2026 7:53:43 AM

0.00196001 Max
0.0001
8.75e-5
7.5e-5
6.25e-5
5e-5
3.75e-5
2.5e-5
1.25e-5
0 Min



SVAR49 - Crack width for material direction X
Expression: SVARS0
Time: 37.808 s
7/16/2026 7:55:17 AM

0.0026939 Max
0.0001
8.75e-5
7.5e-5
6.25e-5
5e-5
3.75e-5
2.5e-5
1.25e-5
0 Min



SVAR49 - Crack width for material direction X
Expression: SVARS0
Time: 38.911 s
7/16/2026 7:55:53 AM

0.00306001 Max
0.0001
8.75e-5
7.5e-5
6.25e-5
5e-5
3.75e-5
2.5e-5
1.25e-5
0 Min

