

1. SUMMARY

1.1. *Technical*

Dr. Benedetti is actually professor of the DICAM Department at the Engineering Faculty of the University of Bologna. The research interests of Dr. Benedetti spans a wide range of topics as denoted by his publications: non linear analysis of reinforced concrete and steel structures, historic buildings behavior and strengthening, fire engineering, structural optimization, fiber reinforced polymers and advanced materials.

Dr. Benedetti is author of 40 refereed journal papers, and 80 proceeding articles. He has participated in many national and international conferences and workshops with roles of session chair, invited speaker or member of the organizing committee.

Dr. Benedetti has always maintained a balance between academic and research effort, and the design implication of current practice problems. He is an active member of many technical national (Italian) commissions and a national technical consultant of Italy for Eurocode 3. He has served as Consultant of many Government Agencies involved with conservation of the architectural heritage and damage mitigation for the seismic areas.

Dr. Benedetti activity includes also many high value structural design works completed in the past in the fields of long span steel and aluminum roofs, high rise reinforced concrete buildings, strengthening and restoration of ancient buildings.

1.2. *Managerial*

Dr. Benedetti has participated in the CNR Commission (Italian National Research Council) for fire building regulation. He acted as NTC for Eurocode 1993-1.2, *fire safety of steel structures*, and team member of EC 1992-3, *Liquid retaining and containment structures*.

He is in the steering committee for the new Italian code for repair and strengthening with externally bonded FRP reinforcement CNR DT200/2004 which is one of the major guide line document for FRP reinforcement all over the world.

During the last five years Dr. Benedetti has been member of the board of examination charged for the selection of Philosophy doctors, research assistants, associate professors, in many Italian Universities. He is responsible for the Structural and Geotechnical Laboratory of the DICAM Department, with a major involvement in execution of experimental investigations.

1.3. *Personal Data*

Name:	Andrea Benedetti
Birthday	may, 15th, 1954
Marital status:	married, two son one daughter,
Primary employment:	University of Bologna, DICAM Department – Structural Engineering
Current rank:	professor, tenured
Consulting:	associate of Benedetti & Partners Consulting Engineers

1.4. Higher education

1.4.1. Academic

Ranked in the competitive examination for the level of professor, Bari Polytechnic, 2001.

Ranked in the competitive examination for the level of associate professor (National), 1992.

Ranked in the competitive examination for research assistant, University of Bologna, 1983.

B. Sc. Magna cum laude in Civil Engineering, minor in structural engineering, University of Bologna, Italy, June 1979.

1.4.2. Professional

Registered engineer Italy, Bologna Chapter N° 3605, 1980.

1.5. Professional activities

1.5.1. Reinforced Concrete Buildings

- Design of the new penitentiary in the city of Forlì (FC) – work amount € 3.000.000. (structural design) 2016.
- Post-earthquake strengthening of the Industrial precast building Poppi Euroforge, Dosso (FE) – work amount € 700.000. (Design and structural work supervision), 2015.
- Post-earthquake strengthening of the Industrial precast building, B.C.R. Company Finale Emilia (FE) – work amount € 1.200.000. (Design and structural work supervision), 2014.
- Post-earthquake strengthening, Via Vico Picenze 25 Building in L'Aquila – Work amount € 1.466.000 (Structural Design), 2013.
- Post-earthquake strengthening of “Aquila 73” Building, L'Aquila – Work amount € 1.400.000 (Design and structural work supervision), 2012.
- Post-earthquake strengthening, Via D'Annunzio Building in L'Aquila – Work amount € 675.000 (Structural Design), 2011.
- Design of the new Malta south water treatment plant in Xghiera, Malta – work amount € 17.000.000 (structural Design) 2009.

1.5.2. Monumental Buildings

- Post-earthquake strengthening of via dell'Ospizio & piazza Santa Lucia historic aggregate, L'Aquila – work amount € 1.757.000. (Structural design) 2016.
- Post-earthquake strengthening of via Cascina historic aggregate, L'Aquila – work amount € 2.000.000. (Structural design) 2015.
- Post-earthquake strengthening of San Lorenzo Church and Belfry, Cento (FE) – work amount € 710.000. (Design and structural work supervision), 2015.
- Post-earthquake strengthening of Palazzo Micheletti, via Castello L'Aquila – work amount € 700.000 (Structural design) 2013.
- Post-earthquake strengthening of San Giacomo Church and Belfry, Bevilacqua (FE) – work amount € 600.000. (Design and structural work supervision), 2013.
- City Administration of Bologna, Structural restoration of the “Ex Sala Borsa” Multimedia Library and exposition Facility – work amount € 8.500.000. (structural design) 1991-1995.

1.5.3. Bridges

- Structural rehabilitation of the S. Clemente bridge, Rignano (FI) – work amount € 500.000. (Structural design) 2013.
- Structural design of the metro railway bypass tunnel at the Milton-Strozzi junction in Firenze – work amount € 1.400.000. (Structural design) 2010.
- C-FRP structural strengthening of a railway overpass bridge in Cremona – work amount € 400.000. (Structural design) 2009.
- Structural design of the Langhirano exit in the Parma freeway – work amount € 3.400.000. (Structural design) 2008.
- C-FRP Strengthening of the Arca Bridge in Pistoia – work amount € 200.000. (Structural design) 2006.

1.5.4. Structural assessment

- Capacity assessment of the historic Ponte Taro Bridge in Parma, 2016.
- Seismic vulnerability assessment of the historic buildings of the Mordani School (RA) and S. Domenico School (FC), 2008.
- Seismic vulnerability assessment of the Reggio Emilia and Bologna Police Headquarters, 2007.
- Seismic vulnerability assessment of the Milan Central Station, Italy, 2006.
- Restoration and strengthening of the Experience Centre of FERRARI Car Factory in Maranello damaged by a severe fire accident, 2004.
- Antonio Merloni SpA, Elica SpA, Diavia SpA, fire engineering expertise activities on heavily damaged R/C structures and production plants, 1991-1994.

1.5.5. Static Testing and approval

- Static testing and administrative approval of the new Hospital of Cona, Ferrara (FE) – work amount €166.000.000, years 2008-2014.
- Static testing and administrative approval of the new penitentiary of Massama, Oristano OR) – work amount € 44.000.000, years 2009-2012.

2. RESEARCH AND DISSEMINATION

The research activity of Dr. Benedetti is focused on multidisciplinary topics with high impact on the European and Italian construction world; his contribution to many regional and national continuing education activities has been carried out with the aim to transfer the research results into technical knowledge useful to the largest number of design engineers.

2.1. Major publications of the last 10 years

- 2016 MARASTONI D., PELÀ L., BENEDETTI A., ROCA P., (2016), “Combining Brazilian tests on masonry cores and double punch tests for the mechanical characterization of historical mortars”, *Construction and Building Materials*, 112, pp. 112-127, ISSN 0950-0618.
- 2016 PELÀ L., BENEDETTI A., ROCA P., (2016), “Mechanical Characterization of Historical Masonry by Core Drilling and Testing of Cylindrical Samples”, *International Journal of Architectural Heritage*, **10**, 2-3, pp. 360-374.

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- 2014 Tarque N., Benedetti A., Camata G., Spacone E., (2014), "Numerical Modelling Of The In-Plane Behaviour Of Rubble Stone Masonry", *SAHC2014 – 9th Int. Conf. on Structural Analysis of Historical Constructions*, Mexico City, 14–17 October 2014.
- 2014 BENEDETTI A., LANDI L., MERENDA D.G., (2014), "Displacement-Based Design of an Energy Dissipating System for Seismic Upgrading of Existing Masonry Structures", *Journal of Earthquake Engineering*, **18**:4, 477-501,
- 2013 PELÀ L., BENEDETTI A., APRILE A., MANGONI E. (2013), "Seismic Assessment Of The Milano Centrale Railway Station", *International Journal of Architectural Heritage*. **7**, pp. 609-627, ISSN:1558-3058
- 2013 PELÀ L., APRILE A., BENEDETTI A. (2013), "Comparison Of Seismic Assessment Procedures For Masonry Arch Bridges", *Construction And Building Materials*. **38**, pp.381-394, ISSN:0950-0618
- 2013 BENEDETTI A., LANDI L., MERENDA D.G., (2013), "A Displacement-Based Method For The Retrofit Of Existing Masonry Structures With ADAS Dampers And External Concrete Walls", *ATEMA 14th International Conference*. Toronto (Canada) August 05-09, pp.12-20 ISBN:9780987994585
- 2013 BENEDETTI A., LANDI L., MERENDA D.G. (2013), "Rehabilitation Of Existing Masonry Structures With Hysteretic Dampers: A Displacement Based Approach", *11th International Conference On Structural Safety & Reliability*. Columbia University, New York June 16-20, pp. 8-16 ISBN:978-113800086-5
- 2012 PELÀ L., BENEDETTI A., MARASTONI D., (2012), "Interpretation of experimental tests on small specimens of historical mortars". In: *Structural Analysis of Historical Constructions*. (pp. 716- 723). SAHC 2012 Wroclaw, Poland.
- 2012 PELÀ L., APRILE A., BENEDETTI A. (2012), "Experimental Study of Retrofit Solutions For Damaged Concrete Bridge Slabs", *Composites Part B: Engineering*. **43**-5, pp. 2471-2479, ISSN:1359-8368
- 2010 BENEDETTI A., MARANI F., RAMALHO M. (2010), "Mechanical Properties of Masonry With Environmental Degradation", *Proceedings Of The 8th International Masonry Conference*. Dresden, Germany July 4-7, pp.1-8, ISBN:9783000313813
- 2010 BENEDETTI A., MANGONI E. (2010), "Experimental Study of an Innovative Double-Slab Composite Beam", *Structural Engineering Int.*, **20**-2, pp. 145-152, ISSN:1016-8664
- 2010 BENEDETTI A., COLLA C. (2010), "Strengthening Of Old Timber Beams By Means Of Externally Bonded Reinforcement", *WCTE 2010, 11th World Conference On Timber Engineering*. Riva Del Garda, Italy, June 20-24, **3**, pp.1-6, ISBN:9781622761753
- 2009 V. RIZZOLI, A. COSTANZO, E. MONTANARI, BENEDETTI A. (2009), "A New Wireless Displacement Sensor Based On Reverse Design Of Microwave And Millimeter-Wave Antenna Array", *IEEE Sensors Journal*. **9**-11, pp. 1557-1566, ISSN:1530-437X
- 2009 PELÀ L., APRILE A., BENEDETTI A. (2009), "Seismic Assessment Of Masonry Arch Bridges", *Engineering Structures*. **31**-8, Pp.1777-1788, ISSN:0141-0296
- 2008 BENEDETTI A., STELI E. (2008). "Analytical Models For Shear-Displacement Curves of Unreinforced and FRP Reinforced Masonry Panels", *Construction and Building Materials*. Vol. 22, Pp. 175 – 185, ISSN:0950-0618
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- 2008 BENEDETTI A., PELÀ L., APRILE A. (2008), “Masonry Property Determination Via Splitting Tests On Cores With A Rotated Mortar Layer”, *ISSM 08*. Istanbul, Turkey Nov. 5-7, pp.8, ISBN:9789755613420
- 2008 BENEDETTI A., LANDI L., MALAVOLTA D. (2008), “On The Design And Evaluation Of Seismic Response of RC Buildings According To Direct Displacement-Based Design Approach” *14 WCEE*, Beijing, China October 12-17, pp.1-8
- 2008 BENEDETTI A., BROSIO I., SIMONELLI F. (2008), “Laboratory Assessment of The FRP to Timber Bonding Force For Ancient Beams Showing Biological Attack”, *SACOMATIS 2008*. Varenna, Italy, Sept. 1-2, **II**, pp. 1-10
- 2007 BENEDETTI A., MANGONI E. (2007). “Analytical Prediction of Composite Beams Response in Fire Situations”, *Journal of Constructional Steel Research*, **63**, pp. 221 – 228, ISSN:0143-974X
- 2006 APRILE A., BENEDETTI A., MANGONI E. (2006). “Design And Execution Of Aluminium Space Frame Advertising Panels And Towers.” *Structural Engineering International*, **16-4**, pp. 367 – 373, ISSN:1016-8664

2.2. Applied Research projects and grants

Dr. Benedetti has participated in research projects sponsored by E.U., by the Italian Research Council, by the Bologna University, by Public Agencies and Administrations, and by private Companies. The participation was at the level of both research staff and project Coordinator.

1) **SHAPE – ERANET FP7, Infravation 2014, years 2016-2018 – grant 942.000 €**

Dr. Benedetti is coordinator of the project with members the Universities of Bologna (IT), Bristol (UK), and Austin (US). The project is focused on the TRL 7 development of a sensor for early warning of damage on bridges.

2) **RELUIS – Italian Net of the Seismic Eng. Labs, years 2004-2016 – grant 34.000 €**

Dr. Benedetti was acting as coordinator in sub themes concerning displacement based design of existing R/C frames with masonry infills

3) **RELUIS – Italian Net of the Seismic Eng. Labs, years 2009-2013 – grant 65.000 €**

Dr. Benedetti was acting as coordinator in sub themes concerning displacement based design of R/C frames and C-FRP retrofit of masonry structures.

4) **RELUIS – Italian Net of the Seismic Eng. Labs, years 2005-2008 – grant 100.000 €**

Dr. Benedetti was acting as coordinator in sub themes concerning displacement based design of R/C frames, joints of precast elements, and C-FRP retrofit of masonry structures.

5) **Analysis of the service efficiency and the retrofitting criteria for a significant set of representative existing bridges localised in the Pistoia County, 2005 – 30.000 €**

The research, committed by the bridge management authority of the Pistoia County, was focused in the evaluation of the seismic reliability of the bridge heritage of the County.