Stelios T. Antoniou

Diploma of Civil Engineering
National Technical University of Athens

MSc, PhD in Earthquake Engineering
Imperial College, University of London

March 2023

I. PERSONAL DETAILS

SURNAME	: ANTONIOU
NAME	: STELIOS (STYLIANOS)
PLACE OF BIRTH	: ATHENS
DATE OF BIRTH	: 12/06/1973
MARITAL STATUS	: MARRIED
RESIDENCE ADDRESS	: 29D NIKOLAOU STR., NEA KIFISIA, ATHENS. 145 61
WORK ADDRESS	: ALFAKAT S.A: 21 PERIKLEOUS STAVROU STR. CHALKIDA, GREECE. 34 132
	SEISMOSOFT SRL: 19 PIAZZA CASTELLO STR. PAVIA, ITALIA. 27100
TELEPHONE NUMBER	: (+30)22210-26112 [work], (+30) 210-6209024 [home]
E-MAIL ADDRESS	: s.antoniou@alfakat.gr - s.antoniou@seismosoft.com
URL	: https://www.alfakat.gr - https://www.seismosoft.com

II. EDUCATION

03/2002 **Doctor of Philosophy (PhD)** from the Department of Civil & Environmental Engineering, Imperial College, University of London. Title of thesis: "*Advanced Inelastic Static Analysis for Seismic Assessment of Structures*".

09/1997 **Master of Science (MSc)** in Earthquake Engineering & Structural Dynamics from the Department of Civil & Environmental Engineering, Imperial College, University of London with distinction and grade 8.76/10. Thesis Title: *"Shear Assessment of Structures under Combined Earthquake Ground Motion"* (grade of thesis: 83%).

09/1996 Diploma in Civil Engineering from the Civil Engineering of the National Technical University of Athens with final grade 8.82/10. Final year Thesis with Title: *" External Prestressing Systems"* (grade 10/10, the thesis was awarded by the Technical Chamber of Greece in 1997).

III. LANGUAGE SKILLS

English: *"Certificate of Proficiency in English"* of the Cambridge Univ. (12/1988).

French: "Certificat de la Langue Française" (06/1989).

Italian: A2 Level.

IV. PROFESSIONAL EXPERIENCE

04/2006 – now Chief Executive Officer and Director of the Repair and Strengthening Section of the Greek construction company **Alfakat S.A.** [https://www.alfakat.gr]. Since 2016 the company's annual budget has ranged between 4,000,000-5,500,000€.

Construction of Strengthening and Retrofit Projects

1. *Strengthening of an* 7-storey *hotel in Chalkida.* Budget approx. 900.000,00€. Seismic retrofit of the 6.000m^2 Saint Minas hotel in Chalkida, in order to meet modern seismic standards. The hotel was built in the early 1970s and the retrofit was done mainly with RC jackets and new shear walls. The interventions were completed in 6 months in 2022-2023.
2. *Strengthening of a* 6-storey *building in Neo Iraklio, Athens.* Budget approx. 200.000,00€. Seismic retrofit of a 1.500m^2 residential building with a soft ground storey, which had sustained damage in the foundations and the ground floor, due to settlement. The interventions involved the strengthening of the foundation system with new strip footings, the jacketing of all vertical members of the ground floor and the addition of new shear walls. The works were carried out between September 2022 and March 2023.
3. *Temporary measures for the protection of the Klonaridi Villa in Athens.* Budget approx. 200.000,00€. The Villa is an exemplified masonry mansion of the late 19th century situated in the Patisia district of Athens, and it has been declared a monument by the Greek Ministry of Culture. It had been partly destroyed by a recent fire. The project involved the temporary retaining measures required for the protection of the load bearing walls that had sustained damage from the fire, and the construction of a temporary steel roof. The works were carried out between January and March of 2022.
4. *Strengthening of an Industrial Installation at Oinofita.* Budget approx. 400.000,00€. Strengthening of the reinforced concrete frame of the buildings of an industrial facility in Oinofita with a total area of approximately 13,000m². The vertical members were strengthened with shotcrete jackets (more than 100 columns of more than 10m height each), whereas the beams and the slabs were strengthened with FRP laminates and fabrics. The works were carried out between November 2020 and March 2021.
5. *Strengthening and creation of a 100m^2 opening in the cooling tower of a power plant in Kozani*. The project is about the strengthening of the shell of the cooling tower of Unit 5 of the Agios Dimitrios Power Plant in Kozani in Northern Greece, and the opening of a hole of 11.50m diameter. The strengthening of the tower was carried out with shotcrete, while the opening of the hole was done with the gradual cutting of concrete segments weighing up to 2.5-3tn. The works were carried out at large heights (up to 35m from the ground) and were completed in 2 months in the summer of 2020.
6. *Strengthening of a reinforced concrete building in a quarry.* Budget approx. 60.000,00€. This is the building, on top of which lies the rock crusher of the Lafarge quarry in Aliveri, Evia. The members below the crusher had sustained very significant damage from the vibrations caused by its operation, and there has been extensive damage in the building, due to corrosion. The retrofit measures consisted of RC jackets in the damaged members, FRP wrapping, corrosion inhibitors and repair mortars. The works were carried out in 15 days in March 2023.
7. *Strengthening of a 2-storey building in Chalkida and the addition of two new floors*. Strengthening of a 2-storey masonry building in Chalkida, so that to enable the addition of two new floors. Apart from the masonry walls, the building also had a small number of reinforced concrete columns. The project was carried out between January and May of 2020.
8. *Repair and strengthening of the ground floor slab of a 37.500 m^2 warehouse in Patras.* Budget approx. 1.600.000,00€. The floor had been severely damaged, due to the

settlement of the soil filling below the concrete slab with crack openings up to 5cm. The repair was carried out on an area of approx. 20.000 m^2 and involved cement grouting (about 400,000 lt) below the slab to fill the gaps and the repair of cracks of a total length of 20,000m with various methods, depending on the crack width. It also involved changes in the 7.500m² cold storage rooms of the warehouse and various renovation works. The works were executed gradually between September 2019 and December 2021 without suspension of the operation of the warehouse.

9. *Strengthening of a residential building in Athens.* Construction of the interventions required for the strengthening of a 2-storey building in the Patisia region of Athens. The building consisted of two parts: an older part with masonry load bearing walls and a more recent, which is a typical reinforced concrete construction. Both parts were strengthened with shotcrete jackets. The construction of the project was carried out between May and October of 2021.

10. *Strengthening of a 2-storey preserved masonry building in Preveza*. The project involved the strengthening of a 2-storey masonry building in Preveza. It is a historic preserved building that was built in the 19th century and has been the residence in Preveza of the famous Greek painter Giannis Moralis. The construction of the project was carried between May and July of 2020.After the completion of the repair works, the building is intended to become a museum.

11. *Strengthening of several RC buildings that sustained significant damage due to corrosion in an industrial complex.* Budget approx. 150.000,00€. The project consists of a series of sub-projects for the repair and strengthening of the reinforced concrete buildings of the Lafarge cement factory in Aliveri, Evia. The members had sustained significant damage, mainly due to corrosion. The repair works involved the removal of the surface cracked concrete, the removal of the corroded steel with sandblasting, the application of corrosion protection, the welding of new steel rebars, the jacketing with shotcrete, and the construction of new load bearing steel members. They were carried out gradually in 2020 and 2021.

12. *Removal of a reinforced concrete crane base from the Athens Acropolis.* Demolition and removal of the 250 tn reinforced concrete base of the crane that was constructed in the front side of the Parthenon in the Acropolis of Athens. The demolition was carried out using different concrete cutting methods, and particular attention has been put, in order not to damage either the monument or the rock below the concrete base. The project was completed in 2 months in the summer of 2020.

13. *Strengthening of a 3-storey building in Athens.* Budget approx. 500.000,00€. The strengthening consisted mainly of the construction of large external and internal steel braces and new RC walls, whilst certain individual existing members were upgraded with FRP materials or steel plates. Furthermore, the strengthening of a 1,000m^2 slab took place, because the slab had sustained serious damage and large permanent deformation of up to 6cm, due to increased vertical loading and poor design. The strengthening was carried out with a combination of shotcrete and FRP laminates. The project was completed in just 45 days in July and August of 2018.

14. *Strengthening of a quarry tunnel with shotcrete.* Budget approx. 90.000,00€. Strengthening of the rock surface of the lining of a quarry tunnel, in which significant rock falls had been observed. The strengthening was carried out with steel and fibre-reinforced shotcrete. The works were executed gradually in 2020.

15. *Strengthening of an existing RC building due to increased live loading.* Budget of strengthening works approx. 120.000,00€. The interventions were part of a larger project. The strengthening was required, due to the increase in the live loads of the building. The works included the strengthening of the beams and the slabs with FRP laminates and FRP wraps and the RC jacketing of the columns. The project was carried out in October and November 2020.

16. *Strengthening of an 8-storey existing R/C building in North Evia.* Budget approx. 200.000,00€. Construction of the strengthening of an 8-storey existing industrial RC

building in North Evia with shotcrete jacketing of all the columns and the majority of the beams, so that the building complies with modern seismic standards. The project also included interventions in the foundation with the enlargement of all the footings and the introduction of tie beams between them, as well as limited interventions in the slabs for the prevention of corrosion.

17. *Repair and strengthening of a two-storey building that had been severely damaged during the two strong earthquakes of February and March 2014 in Kefalonia.* The building had a soft ground storey, where damaged was concentrated. The cross sections of the damaged members were initially restored employing injections with epoxy resins. Subsequently, all the columns of the ground storey were strengthened with reinforced concrete jackets.
18. *Backfilling of the foundation of the ancient marble temple of Erechtheion on the north side of the Acropolis of Athens.* The project involved the backfilling of the foundation of the temple with quartz sand of appropriate gradation, and other interventions that enabled the drainage of the rainwater from the temple.
19. *Strengthening of the RC frame of the Centre for Senior Citizens in Oropos.* Budget of the strengthening works approx. 300.000,00€. The interventions were part of a larger project. Strengthening of an existing 2-storey reinforced concrete building in Oropos, in order to meet modern seismic standards. The project included the construction of RC jackets in all the footings and all the columns, the strengthening of beams with steel plates and the strengthening of slabs with FRP wraps.
20. *Removal of the upper storey of a nine-storey industrial building.* The storey was removed in one piece. Due to the large weight of the segment (approximately 40tn) and the height of its location (about 35m from the ground level), the removal of the section was performed using a large 500-tn crane. The columns were cut using specialised diamond cutters.
21. *Renovation and Strengthening of the Pastoral and Charity Centre in Chalkida.* Budget of strengthening works approx. 300.000,00€. The interventions were part of a larger project. Strengthening of the RC frame of a 1200m^2 building, in order to meet modern seismic standards. The retrofit interventions included new shear walls, RC jackets of all the existing vertical members and new steel beams.
22. *Demolition of an RC slab and construction of a new composite slab in a shopping centre in Syros.* Budget approx. 130.000,00€. Demolition of a reinforced concrete slab in a shopping centre in Syros using specialised cutting equipment, and the construction at the same location but at different height of a new composite slab of approx. 300 m^2. The construction works also include the strengthening of individual RC members, the construction of new reinforced concrete walls, the strengthening of steel beams with welded steel plates and the construction of a new steel staircase.
23. *Repair and retrofit interventions in several LIDL supermarkets in Greece.* Budget: ≅400.000,00€. Repair and strengthening of more than 40 stores of the LIDL supermarket chain in Greece. It included different interventions, such as the repair of structural deficiencies of the steel rooves, and the repair of damaged RC members (walls, columns, beams) with epoxy injections and other methods. All the interventions were carried out at night, without interrupting the stores' operation.
24. *Strengthening of the Miramare Hotel in Eretria, Evia.* Construction of the strengthening interventions in the main building of the hotel complex in Eretria Evia, which covers a total area of about 3500 m^2. The interventions involved the strengthening of R/C columns and shear walls with shotcrete and cast in-situ concrete, the increase of confinement of columns with FRPs, and strengthening of the foundations of the building.
25. *Strengthening of a three-storey RC building in Chalkida and addition of two new floors.* Construction of the strengthening interventions of a three-storey building in Chalkida, in order to enable the addition of two new storeys. The strengthening interventions involved the construction of a new building foundation system with strip footings, the construction

of new shear-walls, and the strengthening of existing reinforced concrete elements with jackets using cast in-situ concrete or shotcrete.

26. *Strengthening a 3-storey masonry building in Kimi, Evia.* Strengthening of a masonry building in Kimi with different intervention techniques, including the partial demolition and reconstruction of parts of the load bearing walls and grout injections. Significant interventions took place at the building's foundations with the construction of a strip footing in the perimeter of the structure and a drainage system that prevents the development of hydrostatic pressures from surface waters.
27. *Strengthening of a concrete slab with FRPs at the Acropolis of Athens.* The project included the strengthening of the concrete slab in front of the Temple of Athina Niki in the Athens Acropolis. The strengthening was carried out using FRPs fabrics.
28. *Repair of 4 RC buildings in Evia.* Budget: 50.000,00€. Repair and protection against corrosion of all the reinforced concrete members in four 3-storey R/C buildings in the "Akti Tritonas" summer resort in Politika, Evia.

Design of Strengthening and Retrofit Projects

1. *Strengthening of the Saint Minas hotel in Chalkida.* Pre-seismic strengthening of the 8-storey, 6.000m^2 Saint Minas hotel in Chalkida, in order to meet modern seismic standards. The hotel was built in the early 1970s and the retrofit was done mainly with RC jackets and new shear walls. The design of the interventions was carried out in January 2022. All the analyses and checks were done with the SeismoBuild package.
2. *Strengthening of a reinforced concrete building in a quarry.* This is the building, on top of which lies the rock crusher of the Lafarge quarry in Aliveri, Evia. The members below the crusher had sustained very significant damage from the vibrations caused by its operation. In total 5-6 member had failed in shear. Furthermore, there has been extensive damage in the building, due to corrosion. The retrofit measures consisted of RC jackets in the damaged members, FRP wrapping, corrosion inhibitors and repair mortars. The project was carried out in December 2021. All the analyses and checks were done with the SeismoBuild package.
3. *Strengthening of a* 2.000m^2 *RC building in Athens.* The building had 8-storeys and 3 basements, it was built in the late 1970s in the Exarchia region of Athens and had sustained light damage in previous earthquakes. The design of the retrofit included mainly new shear walls and the jacketing of selected vertical members. It was carried out in January 2022. All the analyses and checks were done with the SeismoBuild package.
4. *Design of the Strengthening Interventions of an Industrial Installation at Oinofita.* The project involved the assessment and strengthening of the 4 buildings of an industrial facility in Oinofita with a total area of approximately 13,000m². The installation consisted of 4 statically independent buildings that were constructed at different periods, with different load-bearing systems: either RC columns and beams with steel roofs, or steel buildings above RC basements. The reinforced concrete members were strengthened with shotcrete jackets, FRP laminates and FRP sheets, while in older buildings the steel roofs were completely replaced. The design was carried out just in just 40 days in the summer of 2020. The seismic design of the interventions on the reinforced concrete members was carried out with the SeismoBuild software, employing Eurocode 8 Part-3.
5. *Strengthening of a* 5.000m^2 *RC building in Quito, Ecuador.* The building had 8-storeys and 1 basement, it was built in the late 1980s and had sustained light damage during the 2014 Ecuador earthquake. Apart from the repair of the sustained damage, the design of the retrofit included mainly new shear walls, steel braces and the jacketing of selected vertical members. The project was carried out in 2019, and the structural analyses and checks were done with the SeismoStruct package.

6. *Strengthening of a* 12.000m^2 *RC building in Athens.* Seismic evaluation and design of the strengthening interventions of a 12.000m² 11-storey building with 2 basements in the centre of Athens. It is a reinforced concrete building with some large prestressed beams. The analyses and checks were carried out with the SeismoBuild package employing the EC8-Part 3 methodology. The project was completed in 2019 and the proposed retrofit scheme involved the construction of several large RC shear walls and the strengthening of certain existing vertical members either with RC jackets or FRP wrapping.
7. *Strengthening of a 5-storey RC building in Pireas*. Seismic evaluation and design of the strengthening interventions in a 5-storey RC building in Pireas. The design of strengthening was done employing the SeismoBuild package, and the checks were all carried out according to EC8-Part 3. The design was carried out in 2020 and the retrofit proposal involved the strengthening of all the existing vertical members with either RC jackets or FRP wrapping.
8. *Design of strengthening interventions in an hotel in Eretria, Evia.* Seismic evaluation and design of the strengthening interventions of a 5000m² RC hotel in Eretria, Evia, employing the SeismoBuild package with both the Greek Interventions Code, KANEPE, and EC8-Part 3. The project was carried out in 2018 and involved the construction of several large RC shear walls and the jacketing of the more vulnerable existing vertical members.
9. *Strengthening of a masonry building in Chalkida for the construction of two new storeys.* Design of the interventions required for the strengthening of a 2-storey masonry building in Chalkida, so that to enable the addition of two new floors. The design was carried out in 2019 employing the Greek Interventions Code, KANEPE. All analyses were performed using the SeismoBuild and SeismoStruct programs.
10. *Strengthening of a school in Leonidio.* This is a 2-storey 500m^2 reinforced concrete building that had sustained light damage in a previous earthquake. The proposed retrofit scheme included the construction of RC jackets and new shear walls in the perimeter of the building, and the strengthening of certain beams with FRP wraps. The project was executed in 2017. All the analyses and checks were done with the SeismoBuild package, employing both the Greek Interventions Code KANEPE, and EC8-Part 3.
11. *Repair and Strengthening of a building that was severely damaged during the 2014 Kefalonia earthquakes.* Strengthening of a two-storey building with pilotis that had sustained serious damage during the two strong earthquakes of February and March 2014 in Kefalonia. The damage was concentrated mainly at the at the soft ground storey and the main retrofit measure was the strengthening of all vertical members of the ground floor with reinforced concrete jackets.
12. *Design of strengthening interventions in a RC hotel in Eretria, Evia*. Seismic assessment and strengthening of a 3500m² hotel in Eretria, Evia. The project involved the construction of several large RC shear walls and the strengthening of several existing columns with FRP wrapping.
13. *Strengthening of a three-storey RC building for the addition of two new floors.* Design of the strengthening interventions of a three-storey building in Chalkida, in order to enable the addition of two new storeys. The strengthening interventions included the construction of a new building foundation system with strip footings, the construction of new shear-walls, the strengthening of existing reinforced concrete elements with jackets using cast in-situ concrete or shotcrete.

Seismic Assessment Projects

1. *Seismic Assessment of a hotel in Milos.* Seismic assessment of the 5 reinforced concrete buildings of a hotel complex in the island of Milos. The total area of the hotel is approximately 5,000m². The survey and the assessment were completed in just 40 days in November and December of 2021. The SeismoBuild software package was used, employing the methodology of Eurocode 8 Part-3.

2. *Seismic Assessment of a 7-storey RC building in Athens*. The building had been strengthened after the 1999 Athens earthquake with steel braces and RC jackets. The project involved the assessment of these strengthening interventions and the proposal of certain new measures for the retrofit of some vulnerable existing members. The assessment was carried out in 2021 with the use of both SeismoStruct and SeismoBuild, employing the Greek Interventions Code, KANEPE.
3. *Seismic Assessment of an 8-storey RC building in Northern Evia, Greece*. Seismic assessment of an 8-storey 3500m² residential building in Northern Evia. The building was built on a steep slope and it is extremely irregular both in plan and elevation. The assessment was carried out in 2019 with the use of SeismoBuild, employing the Greek Interventions Code, KANEPE.
4. *Seismic Assessment of a School Complex in Athens.* Seismic assessment of the four reinforced concrete buildings of a 3000m² school complex in Athens. The assessment was carried out in 2018 using SeismoBuild, employing both the Greek Interventions Code KANEPE, and EC8-Part 3.

Building Construction Projects

1. *Construction of a new LIDL supermarket in Athens*. Budget approx. 8.200.000,00€. Construction of a 5500m² supermarket store in the Neos Kosmos region of Athens. The works were completed in 8 months, between April and December of 2022.
2. *Construction of a new LIDL supermarket in Keratsini*. Budget approx. 5.000.000,00€. Construction of a 4300m² supermarket store in the region of Keratsini in Athens. The works were completed in 7 months, between July 2020 and January 2021 and included the construction of temporary earth-retaining structures up to about 12m high, as well as the construction of an outdoor parking on the roof of the building.
3. *Construction of a new LIDL supermarket in Peristeri, Athens*: Budget approx. 3.650.000,00€. Construction of a new supermarket in the location of an existing smaller facility, which was partially demolished. The duration of the project was 8 months, and it also involved the construction of a temporary store, in order to prevent the suspension of operations. The project was completed in January 2021.
4. *Renovation of a masonry building in Drapetsona, Athens.* Budget: approx.. €300.000,00. Renovation of a building at the facilities of the HERACLES Group (a member of Holcim) in Drapetsona, in order to house the Hellenic Cement Research Centre (EKET).
5. *Construction of a new LIDL supermarket store in Larisa*. Budget: approx. 3.300.000,00€. The project was completed in 4.5 months in 2020.
6. *Extension and refurbishment of an existing LIDL supermarket store in Patisia, Athens*. Budget: approx. 1.200.000,00€. The project was completed in 3 months in 2018, whereas the existing store was closed for only one week during the works.
7. *Construction of a new LIDL supermarket store in Pireas*: Budget: approx. 3.225.000,00€. Construction of a new supermarket store. The project was completed in 2017 in 4 months.
8. *Construction of a new LIDL supermarket store in Lamia*. Budget: approx. 3.550.000,00€. Construction of a new supermarket store in the location of an existing smaller facility, which was demolished. The project was completed in 4.5 months in 2017.
9. *Construction of a new LIDL supermarket in Heraklion, Crete*. Budget: approx. 3.250.000,00€. Construction of a new supermarket in the location of an existing smaller facility, which was demolished. The project was completed in 4.5 months in 2016, and the existing store was closed for just 45 days.
10. Construction of a new LIDL supermarket in Syros, Greece: Budget: approx. 975.000,00€. Construction of a new supermarket in an existing shopping mall in Syros. The project was completed in just 2 months in 2015.

11. Construction of an Elderly Care Centre at Dilesi, Viotia. Budget: aproox. 8.800.000,00€. Construction of the new elderly care centre of the Orthodox Archdiocese of Athens at Dilesi, Viotia. The total area of the building is more than 4600 m^2 in three levels, and the construction also includes a 80 kWp photovoltaic installation on the roof of the building.
12. *Construction of new bakery facilities and renovation of eleven LIDL supermarkets in Greece*. Budget: approx. 2.400.000,00€. This is a series of 11 independent projects that included the construction of the new internal bakery shop inside the stores, the upgrading of all the electrical and mechanical installations and the general renovation of the buildings (e.g. insulation, parking space, windows and doors etc.)
13. Expansion of the fire protection installation of a 40.000 m^2 industrial building in Thiva. Budget approx. 250,000,00€.

Infrastructure Projects

1. Construction of twelve piers for the support of a rotary kiln and the mechanical equipment of a magnesium smelting line in an industrial installation in Northern Evia, Greece. Budget: approx. 400.000,00€.
2. Construction of Infrastructure Works in a 500kWp Photovoltaic Station in Thiva. Budget: approx. 100.000,00€.
3. Construction of a small port in Thisvi, Viotia. Budget: approx. 1.000.000,00€.

09/2002 – now Founder and Managing Director of the **Seismosoft ltd.** software company [http://www.seismosoft.com/], which specialises in the field of Earthquake Engineering (seismic analysis of structures, strong motion data processing, derivation of artificial accelerograms) with more than 50,000 users in more than 100 countries worldwide. The main packages of the company are the following:

1. **SeismoStruct** is an award-winning program developed for the accurate analytical assessment of different classes of structures, such as buildings, bridges or industrial plants, subjected to earthquake strong motion. It features a number of verified nonlinear static and dynamic analysis methods (pushover, incremental dynamic analysis, etc.) so as to meet the analytical requirements posed by the modern performance-based seismic assessment and design philosophy.
2. **SeismoBuild** is an innovative Finite Element package for the seismic assessment and strengthening of reinforced concrete buildings, which is targeted mainly to the design office. The program is capable of fully carrying out the Code defined assessment methodologies from the structural modelling, through to the required analyses and the corresponding member checks. Different Standards are supported, e.g. ASCE41-17, Eurocodes' framework, Italian National Seismic Code NTC-18, Greek Seismic Interventions Code KANEPE, New Turkish Code TBDY. Both metric and imperial units, as well as European and US reinforcing bars types are supported.
3. **SeismoSignal** constitutes a simple, yet efficient, package for the processing of strong-motion data. Amongst other things, it allows for the derivation of elastic and constant ductility inelastic response spectra, the computation of Fourier amplitude spectra, the filtering of high and low frequency record content and the estimation of other important seismological parameters, such as the Arias Intensity and the significant and effective durations.
4. **SeismoSelect** is an easy and efficient way to search, select, scale and download ground motion data from different strong motion databases that are available on-line. Different criteria may be employed as the parameters of interest, with which to carry out the searches. These include a target response spectrum, different ground motion parameters (e.g. PGA, PGV, Arias or Housner Intensity), information regarding the event (e.g.

magnitude, faulting style location, date) or the recording site (e.g. Vs30, epicentral distance).

5. **SeismoMatch** is an application capable of adjusting earthquake records, through wavelet addition, to match a specific target response spectrum. Users have the opportunity to simultaneously match a number of accelerograms, and then obtain a mean matched spectrum whose maximum misfit respects a pre-defined tolerance. This software can thus be used in combination with records selection tools and records appropriateness verification algorithms to define adequate suites of records for nonlinear dynamic analysis of new or existing structures.
6. **SeismoArtif** is an application capable of generating artificial earthquake accelerograms matched to a specific target response spectrum using different calculation methods and varied assumptions. It is noted that the use of real accelerograms and spectrum matching techniques (i.e. SeismoMatch), together with records selection tools, tends to be recommended for the derivation of suits of records for use in nonlinear dynamic analysis of structures. However, in those cases where access to real accelerograms is, for whatever reason, challenging or inappropriate, then a tool such as SeismoArtif will be of pertinence and usefulness.
7. **SeismoSpect** allows users to create their own library of ground motion records and save them all in a single file making it easy to handle and share large numbers of records. This application is then capable of applying several filter types, perform baseline-correction, computing the mean spectral response of a collection of accelerograms and to compare these results with a target spectrum. A number of strong-motion parameters can also be calculated.

10/2002 – 06/2004 Designer in the Kalliergos OTM ltd. design company in Athens (https://www.kalliergos.com/en/). Design of bridges and retaining walls. Typical Projects:

- Egnatia Motorway, Bridge Γ7: Cantilever bridge of total span length 365.0m.
- Attiki Odos: Project KTX-TE02: 126.0m retaining wall on the Saketa region of Katehaki avenue. The project was designed after a landslide in March 2003.
- Media village of the Olympic Games 2004 in Athens: Bridge below the metro lines using the forepoling method, in order to avoid the interruption of the metro trains' operation.

03/2001 – 11/2007 Responsible for the operation and maintenance of the website http://www.seismolinks.com/

06/2002 – 09/2002 Rose School, Universita di Pavia, Italy. Development of software for the seismic analysis and the evaluation of seismic risk of structures: http://www.roseschool.it/

12/2000 – 09/2001 Research Assistant at Imperial College, London in the SAFERR program (Seismic Assessment For Earthquake Risk Reduction): http://www.saferr.net/

12/1999 – 11/2000 Research Assistant at Imperial College, London in the ICONS program (Innovative Seismic Design Concepts for New and Existing Structures).

V. KEYNOTE LECTURES

4TH INTERNATIONAL CONFERENCE ON STRUCTURAL ENGINEERING (02/2018)

Presenter of one of the keynote lectures of the 4th International Conference on Structural Engineering (http://www.irastconf.com), organized by the Iranian Society of Structural Engineering (ISSE). Title: "*Retrofitting of RC Buildings, Strengthening Techniques and Intervention Strategies*". The basic principles for the strengthening of existing structures and the strategy of structural interventions were presented, with the help of worked examples and several case-studies of real strengthening projects.

VI. WORKSHOPS & COURSES

ON-LINE COURSE ON SEISMIC ASSESSMENT AND RETROFITTING (2019 onwards)

Main presenter in a 60-hour course with title "*Seismic Assessment & Retrofitting of Existing RC Structures using SeismoStruct and SeismoBuild"*. The basic principles for the seismic assessment and strengthening of existing structures are explained, and several worked examples are presented with the use of SeismoBuild and SeismoStruct. The course is repeated three times per year, and since early 2023 it is given both in English and Spanish. URL: https://ingeoexpert.com/en/courses-online/seismic-assessment-seismobuild/.

WORKSHOP IN SEISMIC ASSESSMENT AND RETROFITTING, MALAYSIA (05/2018)
Presenter of a 9-hour workshop with title "*Seismic Assessment & Retrofitting of Existing Reinforced Concrete* Structures" hosted in Kuala Lumpur and Kota Kinabalu, Malaysia. The basic principles for the seismic assessment and strengthening of existing structures were explained, and several worked examples were presented.

SERIES OF WORKSHOPS IN SEISMIC ASSESSMENT AND RETROFITTING, IRAN (02/2018) Main presenter of a series of four 3-hour workshop with title *Seismic Assessment & Retrofitting of Existing Reinforced Concrete* Structures using SeismoBuild and SeismoStruct hosted at different cities in Iran (Tehran, Tabriz, Isfahan & Mashhad). The basic principles for the seismic assessment and strengthening of existing structures were explained, and several worked examples were presented with the use of SeismoBuild and SeismoStruct.

JORDAN ENGINEERS ASSOCIATION (05/2017) Presenter of a two-day Workshop on the *Seismic Assessment & Retrofitting of Existing Reinforced Concrete Structures* at the Jordan Engineers Association in Amman (http://www.jea.org.jo). The basic principles for the seismic assessment and strengthening of existing structures were explained, and several case-studies of strengthening projects were presented.

VII . PUBLICATIONS

BOOKS

1. Antoniou S. [2023] Seismic Retrofit of Existing Reinforced Concrete Buildings. ISBN: 978-1-119-98732-1. February 2023, Wiley-Blackwell, 544 Pages.

BOOK CHAPTERS

2. Antoniou S. and Pinho R. [2018] "Nonlinear Seismic Analysis of Framed Structures". *Structural Engineering in Vibrations, Dynamics and Impacts* by CRC Press, Taylor & Francis Group, 2018, pp. 268–301.

3. Pinho R., Antoniou S., Casarotti C. and Lopez M. [2005] "A displacement-based adaptive pushover algorithm for assessment of buildings and bridges". Nato Science Series: IV: Earth and Environmental Sciences. Volume 66, Book Advances in Earthquake Engineering for Urban Risk Reduction. Springer Netherlands, ISBN 978-1-4020-4569-1 (Print) 978-1-4020-4571-4 (Online), pg. 79-94

4. Fragiadakis M., Pinho R. and Antoniou S. Modelling inelastic buckling of reinforcing bars under earthquake loading. Chapter 23, Post-Conference Book Publication: Computational Structural Dynamics and Earthquake Engineering, COMPDYN 2007.

JOURNAL PAPERS

1. Smyrou E., Blandon C., Antoniou S., Pinho R., Crisafulli F. [2011] Implementation and Verification of a Masonry Panel Model for Nonlinear Dynamic Analysis of Infilled RC Frames. Bull. of Earthquake Engineering, published online 11 April 2011.

2. Asteris P. G., Antoniou S., Sophianopoulos D. S., and Chrysostomou C. Z. [2011] Mathematical Macromodeling of Infilled Frames: State of the Art. *Journal of Structural Engineering, ASCE. December 2011*.

3. Pinho R., Casarotti C. and Antoniou S. [2007a] "A comparison of single-run pushover analysis techniques for seismic assessment of bridges," Earthquake Engineering and Structural Dynamics, Vol. 36, Issue 10, pp. 1347-1362.

4. Antoniou S. and Pinho R. [2004a] "Advantages and Limitations of Force-based Adaptive and Non-Adaptive Pushover Procedures," *Journal of Earthquake Engineering*, Vol. 8, No. 4, pp. 497-522.

5. Antoniou S. and Pinho R. [2004b] "Development and Verification of a Displacement-based Adaptive Pushover Procedure," *Journal of Earthquake Engineering*, Vol. 8, No. 5.

6. Tzanetos, N., Elnashai A.S., Hamdan F.H. & Antoniou S. [2000]. Inelastic Dynamic Response of RC Bridges Subjected to Spatial Non-synchronous Earthquake Motion. Advances in Structural Engineering, Vol. 3, No. 3.

CONFERENCE PAPERS

1. Antoniou S. and Pinho R. [2009] "Displacement-based adaptive pushover". Proceedings of the the 2nd International Conference on Computational methods in structural dynamics and earthquake engineering.

2. Pinho R., Bhatt C., Antoniou S., Bento R. [2008] "Modelling of the horizontal slab of a 3D irregular building for nonlinear static assessment," Proceedings of the Fourteenth World Conference on Earthquake Engineering, Beijing, China, Paper no. 05-01-0159.

3. Pavan A., Pinho R. and Antoniou S. [2008] "Blind prediction of a full scale 3D steel frame tested under dynamic conditions". Proceedings of the 14th World Conference on Earthquake Engineering. Beijing, China, October 2008.

4. Fragiadakis M., Pinho R. and Antoniou S. [2007] "Modelling Inelastic Buckling of Reinforcing Bars under Earthquake Loading," Proceedings of the ECCOMAS Thematic Conference on Computational Methods in Structural Dynamics and Earthquake Engineering (COMPDYN07), Crete, Greece.

5. Ferracuti B., Savoia M., Pinho R., Francia R. and Antoniou S. [2007] "Pushover analysis of FRP-retrofitted existing RC frame structures," Proceedings of the Eighth International Symposium on Fiber-Reinforced Polymer Reinforcement for Concrete Structures (FRPRCS-8), Patras, Greece.

6. Smyrou E., Blandon C.A., Antoniou S., Pinho R. and Crowley H. [2006] "Implementation and verification of a masonry panel model for nonlinear pseudo-dynamic analysis of infilled RC frames," Proceedings of the First European Conference on Earthquake Engineering and Seismology, Geneva, Switzerland, Paper no. 355.

7. Meireles H.A., Pinho R., Bento R. and Antoniou S. [2006] "Verification of an adaptive pushover technique for the 3D case," Proceedings of the First European Conference on Earthquake Engineering and Seismology, Geneva, Switzerland, Paper no. 619.

8. Pietra D., Pinho R. and Antoniou S. [2006] "Verification of displacement-based adaptive pushover for seismic assessment of high-rise steel buildings," Proceedings of the First European Conference on Earthquake Engineering and Seismology, Geneva, Switzerland, Paper no. 956.

9. R. Pinho , S. Antoniou and D. Pietra [2006]. A Displacement-Based Adaptive Pushover for Seismic Assessment of Steel and Reinforced Concrete Buildings. US National Conference in Earthquake Engineering, San Francisco, US, 17th – 21st April 2006. Paper No. 1701

10. Pinho, R. & Antoniou, S. [2005]. A Displacement-Based Adaptive Pushover Algorithm for Assessment of Vertically Irregular Frames. 4th European Workshop on the Seismic Behaviour of Irregular and Complex Structures. Thessaloniki 26-27 August 2005.

11. Antoniou, S., Rovithakis, A. & Pinho, R. [2002]. Development and verification of a fully adaptive pushover procedure. Proceedings of the Twelfth European Conference on Earthquake Engineering. Paper Reference 822 [computer file], Elsevier Science Ltd.

12. Elnashai, A. S. & Antoniou, S. [2000]. The September 7, 1999 Athens earthquake. Implications of recent earthquakes on seismic risk : papers presented at the Japan-UK Seismic Risk Forum 3rd Workshop, 6-7 April 2000, Imperial College, London, UK.

13. Elnashai, A. S. & Antoniou, S. [1998]. Assessment of behaviour factors in EC8 including shear supply-demand considerations. Proceedings of the Eleventh European Conference on Earthquake Engineering [computer file], A. A. Balkema.

TECHNICAL NOTES

1. Fragiadakis, M., Pinho, R. and Antoniou, S. (2008). "Modelling inelastic buckling of reinforcing bars under earthquake loading", in Progress in Computational Dynamics and Earthquake Engineering, M. Papadrakakis, D.C. Charmpis, N.D. Lagaros and Y. Tsompanakis (Eds.), A.A. Balkema Publishers – Taylor & Francis.

VIII. EDITORSHIP

1. Elnashai, A. S. & Antoniou, S. [2000]. Implications of recent earthquakes on seismic risk: papers presented at the Japan-UK Seismic Risk Forum 3rd Workshop, 6-7 April 2000, Imperial College, London, UK. Series on innovation in structure and construction v.2, Imperial College Press, London, 2000, 228 pages.

IX. ORGANISATIONS AND SOCIETIES

1. Member of Greek Society of Earthquake Engineering (https://www.eltam.org/).
2. Member of the Greek Society of Civil Engineers (https://www.spme.gr/).
3. Member of the Technical Chamber of Greece since 03/1997 (https://www.tee.gr/).

X. COMPUTER SKILLS

Main developer of the following software packages: (i) SeismoBuild, (ii) SeismoStruct, (iii) SeismoSignal, (iv) SeismoMatch, (v) SeismoSelect, (vi) SeismoArtif, and (vii) SeismoSpect. Developer of smaller applications for section analysis (derivation of moment-curvature curves), design of RC sections, citations management, calculation of creep coefficients for concrete etc.

Very good knowledge:

i. Packages for the design and analysis of structures (SAP2000, SOFiSTiK, StereoStatika, Fespa).
ii. CAD software (AutoCAD, ZWCAD).
iii. Programming languages (Delphi, Pascal, Fortran, Basic, C++).
iv. Operating Systems (Windows, Linux, MacOS).
v. Microsoft Office (Word, Excel, Access, PowerPoint, Project).
vi. Graphics editing program (Photoshop)
vii. Computer networks in Windows and Linux.