



REPORT ON TIME CAPSULE PROJECT

Prof. Loretta Batali – President of the Romanian Society for Soil Mechanics and Foundation Engineering (SRGF)

The Romanian Society for Soil Mechanics and Foundation Engineering (SRGF) has started to work on the Time Capsule project initiated by ISSMGE for presenting Romanian achievements in Soil Mechanics and Foundations.

I. SHORT HISTORY OF SRGF

The following short history of SRGF is extracted from the paper published by Prof. Sanda Manea – former President of our society, at present Honorary President – in 2018 in Revista Construcțiilor; some of the data have been updated. The original paper in Romanian language can be seen here: [S. Manea - SRGF trecut prezent viitor SRGF past present future.pdf](#)

S.R.G.F. was founded on January 12, 1990 at the initiative of Professor Emil Botea elected President and Professor Iacint Manoliu elected Vice-President. The founding meeting was attended by 88 delegates from Bucharest, Timisoara, Iasi, Botosani and Suceava, having the mandate of other 84 colleagues. Very shortly after the foundation of the society, the death of Professor Emil Botea occurred, which is why the S.R.G.F. Council appointed Professor Ioan Stanculescu as President, who held this position until 1996.

Until 1996 SRGF management was provided by the President of the Society together with a Secretary.

SRGF secretaries were personalities from the field of Geotechnical Engineering, respectively: Dr. Ing. Dan Dimitriu (First Secretary of S.R.G.F), Professors Tudor Sillion, Anotolie Marcu or Dr. Ing. Roland Mlenajek.

Between 1996 and 2012 the President of S.R.G.F. was Professor Iacint Manoliu supported by Professor Nicoleta Radulescu as Secretary of the society.

Since 2012 until 2021, the President of S.R.G.F. was Professor Sanda Manea, and the Secretary was Assoc. Prof. Ernest Olinic. The honorary president was Professor Iacint Manoliu, member of the Romanian Academy of Technical Sciences, until his death in 2018.

At present, after the elections held in June 2021, the President of SRGF is Prof. Loretta Batali and the secretary eng. Alexandra Ene.

Since 1996 S.R.G.F. has the form of organization similar to that of the International Society of Earth Mechanics and Geotechnical Engineering (I.S.S.M.G.E.), having established branches without legal personality in the main academic centres in the country: Bucharest, Iasi, Timisoara and Cluj-Napoca, which coordinate the activity in the city and county of residence, as well as in the counties assigned to the respective branch.

The branches have an organization similar to the general one, having a President, who is also Vice-President of SRGF and a Secretary.

The branch presidents over time and so far have been:

Bucharest Branch: Prof. Sanda Manea, Prof. Loretta Batali, Eng. Lóránd Sata



Iasi Branch: Prof. Paulica Raileanu, Prof. Em. Anghel Stanciu, Prof. Irina Lungu

Cluj Branch: Prof. Augustin Popa, Assoc. Prof. Vasile Farcas, Assoc. Prof. Nicoleta Ilieș

Timisoara Branch: Prof. Tadeusz Schein, Prof. Marin Marin, Assoc. Prof. Ion Bogdan, Prof. Adrian Ciutină.

Currently SRGF has a little below 300 national members and 119 international members (ISSMGE).

From a historical point of view, it is also worthwhile mentioning that S.R.G.F. was not born on an empty field but, taking full advantage of the new conditions created by the revolution of December 1989, it was part of a natural continuity of the Geotechnics and Foundations Commission within the Construction Section of the National Council of Engineers and Technicians (C.N.I.T.), established in 1966, as prof. Manoliu detailed in the paper "Files from the history of the Romanian Society of Geotechnics and Foundations" written for The XIIIth National Conference of Geotechnics and Foundations – Cluj-Napoca, September 07-10, 2016.

National Conferences

As it was mentioned above, although until 1990 there was no national society for Soil Mechanics and Foundations, the technical and scientific activity in this field had continuity over time.

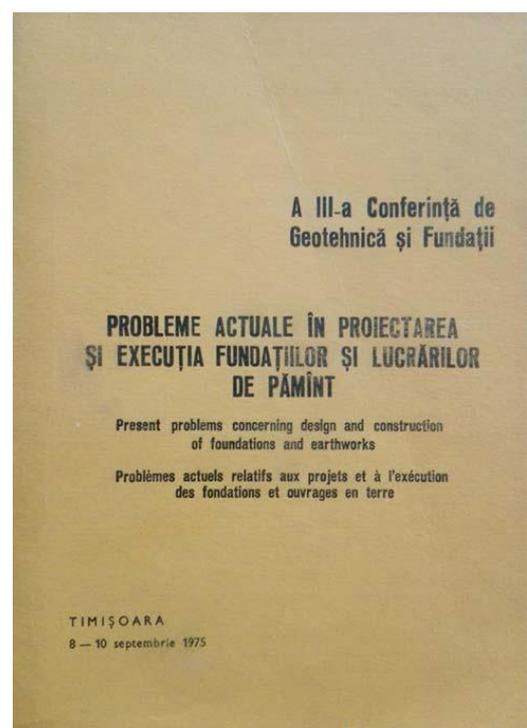
Thus, we quote from the published memories of Professor Iacint Manoliu:

"The autumn of 1967, the festivities hall of the Bucharest Construction Institute in the former Republicii Boulevard. The first edition of the National Conference on Geotechnics and Foundations, organized by the Geotechnics and Foundations Commission of the National Council of Engineers and Technicians, chaired by Professor Emil Botea, and by the Department of Geotechnics and Foundations of I.C.B, headed by Professor Hugo Lehr.

June 1971, the 2nd Conference of Geotechnics and Foundations again in Bucharest, in the same hall. C.N.I.T., now subordinated to the General Union of Trade Unions, is going through a fast period, that is, it has funds, and approves without hesitation professor Botea's request to give the Conference an international character. As a result, in addition to the Romanian participants, several dozen specialists from many countries arrived, including well-known names, or who were to become established, in international geotechnics: Heinz Brandl from Austria, Jiri Skopek and Ludovik Pruska from Czech-Slovakia, Anaida Grigorian from the USSR.

After 4 years in 1975, the 3rd National Conference on Geotechnics and Foundations stopped in Timisoara, being organized in the best conditions by Professor Marin Paunescu helped by young and enthusiastic collaborators such as Agneta Gruia, Virgil Haida, Tadeusz Schein.

After the region of Banat, it was the turn of Moldova, organizing in 1979 the 4th National Conference of Geotechnics and Foundations. The geotechnicians from Iasi, led by the late professor Tudor Silion, having a reliable support in the person of the still young Paulică Raileanu, welcome their





colleagues from all over the country, to whom they arouse their envy by showing them in their sweet city most everything a geotechnician passionate about his job can want: unstable slopes, very compressible terrains, lands sensitive to wetting, swelling clays.

In 1983, the Conference crosses the Carpathians and reaches Cluj-Napoca, in a mild beginning of autumn, which highlights more strongly the brilliance of the Transylvanian burg. Professor Viorel Pop, so prematurely departed, and his colleague Augustin Popa, are the hosts of the 5th national conference that transforms for a few days the city on the Someș River into the capital of the Romanian geotechnics.

The year 1987 brings a premiere: for the first time the Conference is no longer hosted by one of the great academic centers of the country, but by Galați, whose reputation as a city in Romania with the hardest foundation conditions fully justifies the choice as a venue for the 6th national conference having as general theme "Foundation on difficult lands". The Galați Conference recorded a record of participants – 455.

After the Revolution, the mission of organizing the National Conferences fell to the new guild organization, the Romanian Society of Geotechnics and Foundations.

The string was renewed, but not in 1991, as planned, but, paying tribute to the difficulties of the first years of transition, in 1992, in Timisoara through the 7th National Conference of Geotechnics and Foundations. The presence of colleagues from Bulgaria and Poland, who arrived for a preparatory meeting for the next Danube-European Conference to be hosted by Romania, gave the conference hosted by Timisoara an international character.

The situation was to be repeated after 4 years in Iasi, in 1996, at the 8th National Conference, when foreign guests from France, Italy, Great Britain, Germany, were partners in a European program initiated and coordinated by U.T.C.B.

This was never the case in Cluj-Napoca, in 2000, at the 9th National Conference on Geotechnics and Foundations, where instead it was possible to record the participation for the first time of some representatives in Romania of some large international companies in the field, a sign that globalization does not bypass Romania.

The tenth jubilee edition took place in the organization of the Bucharest Branch, at the Technical University of Constructions, in 2004.

There followed the national conferences in 2008 in Timisoara (XIth), 2012 in Iasi (XIIth) and in Cluj-Napoca 2016 (XIIIth). The XIVth edition took place in 2022 online, instead of Bucharest (postponed from 2020 due to Coronavirus breakout) – another premiere in our history. Foreign guests have attended this online edition: Dr. Andrew Bond



Xth edition of the National Conference, Bucharest 2004



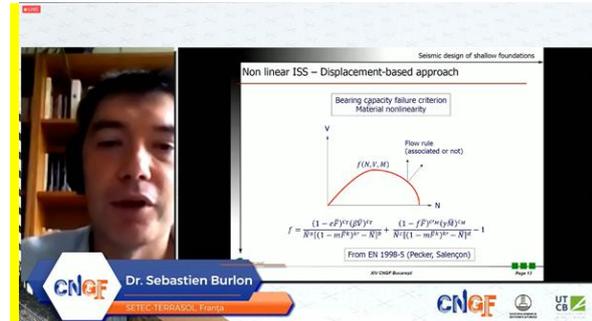
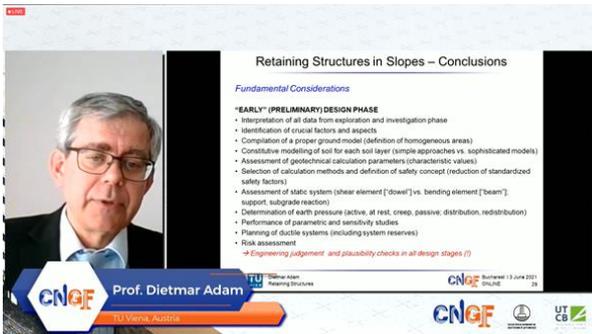
XIIth edition of the National Conference, Iasi, 2012



XIIIth edition of the National Conference, Cluj-Napoca, 2016



(UK, former Chairman CEN/TC250/SC7), Prof. Dietmar Adam (TU Vienna), Dr. Sebastien Burlon (SETEC TERRASOL, France).



XIVth edition of the National Conference, online, 2021

International conferences organised by SRGF

Through the personal efforts of Professor Manoliu, the personality of the Romanian geotechnics with the highest visibility and international recognition, to which were added the efforts of SRGF members, in Romania began to organize prestigious international manifestations, as follows:

- 1995 – 10th Danube Conference on Geotechnical Engineering, Mamaia
- 2000 – 1st International Conference on Geotechnical Engineering Education and Training, Sinaia
- 2003 – 2nd International Young Geotechnical Engineers' Conference, Mamaia
- 2008 – 1st International Conference on Education and Training in Geo-Engineering Sciences, Constanta
- 2016 – 25th European Young Geotechnical Engineers Conference, Sibiu





25th EYGEC, 2016, Sibiu

In 2023 will be organised in Bucharest the 17th Danube – European Conference on Soil Mechanics and Geotechnical Engineering.

Romanian Magazine of Geotechnics and Foundations

A specific form of connection between the members of the society is represented by the SRGF publications.

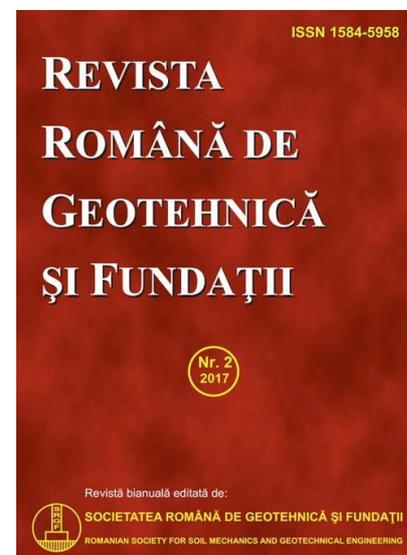
After a period in which the SRGF Bulletin was published (under the care of Prof. Ion Antonescu and Prof. Iacint Manoliu) starting with 2004, the Romanian Magazine of Geotechnics and Foundations was published.

In the editor's office of no. 2/2008 of RRGF, Prof. Iacint Manoliu, President of SRGF at that time, said:

"A place in the life of S.R.G.F. must find out and consolidate it and the Romanian Magazine of Geotechnics and Foundations, reached its fourth issue. When, more than 5 years ago, it was decided in the S.R.G.F. Council to edit a journal, the option was made not only for the number of appearances - two per year - but also for a diverse content, in which the articles of technical - scientific character to stand next to the informative materials. The joy with which the two issues published in 2004 were received, determined me to be quite optimistic about the possibility of maintaining the proposed pace. I was bitterly mistaken. The expectation of contributions, for the strictly technical part but also for the different headings, was extended year after year and only in 2008, under the impetuosity of approaching a new national conference, the feat of 2004 could be repeated.

What happened to the magazine is, I might say, symptomatic of our society. To carry out the projects, and the Romanian Magazine of Geotechnics and Foundations is one of them, must mean a collective effort."

RRGF continued to appear the rate of two numbers per year, each number being prepared and edited by one Branch, by rotation until recently. At present we are trying to redefine this Magazine.





More details about the history of the Romanian Society and of some important scientific events can be found in the paper published by Prof. Iacint Manoliu at the XIIIth National Conference (Cluj – Napoca, 2016): here in English version [Manoliu I - Files from SRGF history_CNGF2016.pdf](#) and here in Romanian version: [Manoliu I - File din istoria SRGF_CNGF2016.pdf](#).

II. PAST PERSONALITIES AND ACHIEVEMENTS OF ROMANIAN GEOTECHNICS

The past of the Romanian geotechnics has been shaped, of course, by some major personalities and it includes some important achievements. Therefore, the past will be described here after based on the evocation of some personalities that had a major influence in this field and based on some technical and scientific papers describing the main Romanian achievements.

Personalities

Prof. Hugo Lehr (1902 – 1978)



The text below was published in the volume *Personalities in constructions* edited by Prof. Hristache Popescu.

He was born in 1902. He studied in Austria and Germany. After completing his university studies, he worked, as an engineer, until 1945, in Germany and the Netherlands, participating in infrastructure works carried out in Hamburg, Bremen, Liebeck and in the construction of Dutch ports on the North Sea.

Returning to Romania in 1945, in Bucharest, he worked in the field of foundations and hydrotechnical constructions.

As a professor at the Institute of Constructions in Bucharest, he led the Department of Geotechnics and Foundations for 20 years, participating in the realization of the Galati and Iasi industrial plants, of the large housing complexes, dam constructions, ports and land reclamation.

At the same time, he participated in the elaboration of treaties of foundations necessary for the higher education of constructions (new knowledge of soil mechanics and techniques of execution of works of shallow and deep foundations). We mention in this respect the publication of books: *Procedures of foundations I*, Ed. Tehnica, 1950; *Foundations I, Physics and Mechanics of The Earth Masses*, State Editions for Architecture and Construction, 1954, book awarded with the State Prize IInd class; *Calculation examples for foundation design*, Ed. Tehnica, 1960. He has also published numerous articles in specialized magazines in the country and abroad.

Prof. Hugo Lehr marked a stage in the development of foundation education at the Institute of Constructions Bucharest, with important contributions to teaching the course of geotechnics and foundations.

We remind that he was also a PhD supervisor in the field of geotechnics and foundations.

In addition to the State Prize award for his exceptional work in education, science and industry, he was also awarded various orders and medals.

In the science of geotechnics and foundations, Prof. Hugo Lehr was a trailblazer, enrolling himself among the most important personalities of the Romanian science and technique in constructions.



Prof. Ion Stănculescu (1919 – 2002)

The following text is the English translation of the paper published by Dr. René Jacques Bally in no. 1/2004 of the Romanian Magazine of Geotechnics and Foundations; the original text in Romanian language can be seen here in that issue of the Magazine: [RRGF 2004-1.pdf](#).

More than two years have passed (*NB: he died in 2002*) since Professor Ioan Stănculescu left us, a personality of overwhelming importance for geotechnical engineering in Romania.



He was a professor at the Technical University of Civil Engineering Bucharest and Doctor Honoris Causa of the Gheorghe Asachi Technical University of Iasi and of the Technical University of Civil Engineering Bucharest. He was also a brilliant engineer, contributing throughout a 60-year career to solving the problems of foundation in the most difficult conditions of many and varied constructions throughout the country.

Between 1990 and 1996, Professor Ioan Stănculescu was President of the Romanian Society of Geotechnics and Foundations, and since 1997 Honorary President of the same organization. In its first issue, the Romanian Magazine of Geotechnics and Foundations intends to pay homage to the memory of the great professor and engineer by publishing evocations written by two close collaborators.

As student of the Faculty of Civil Engineering of the Polytechnic Institute of Bucharest, I met at that time the assistant Ing. Ioan Stănculescu, the future teacher. Since 1953 my work has focused on geotechnical engineering and I have remained consistent in this field for 50 years. Implicitly, I was when closer, when further away from the activity of Prof. Ioan Stănculescu. The age difference, I was 6 years younger than him, was significant for a student-assistant relationship, but as the age grew, this difference gradually lost its importance. However, throughout the 50 years I continued to feel permanently like a student who has to learn from Prof. Stănculescu. This attitude is not the result of an inertia but of the impression that his achievements have always made to me.

I would be overtaken by trying to make a synthesis of these achievements, but I will still try to explain my attitude by referring to some of the aspects of the teacher's work. Ioan Stănculescu, who particularly impressed me.

Around the year 1950, before and after him, under the guidance and participation of eminent engineers, university professors and at the same time remarkable construction makers, the new discipline of geotechnical engineering (then the geotechnical science, of the foundations and the stability of the slopes) was built in Romania, whose beginning was considered the book of Karl Terzaghi, published in 1925.

During this pioneering period, the young engineer Ioan Stănculescu was full of initiative and energy involved in promoting the new discipline. He carried out with us the first experiments of improving the land by electric means inspired by the remarkable achievements and successes of some German specialists in the '30s and during the war.

With the establishment of contact with the Soviet technique, it became known the interest shown by specialists from the USSR to use silicate to improve land, leading up to the elaboration of detailed instructions for application.



Engineer Stănculescu managed in a short time to arrange a very well-established experimental station at the Cosca factory on the outskirts of Bucharest for the experimentation of silicatization and then to apply it to the consolidation of the foundation ground of a hotel in Bucharest. He was also the main factor in the study initiated and conducted by a geotechnical team of the Academy under the leadership of academician I. Profiri, about the behaviour of swelling clays that gave great difficulties for rural constructions in some areas of the country. The instructions with which this study was completed remain valid today and are taken into account in the norms that were developed many years later.

In the same period, the engineer Ioan Stănculescu realized an exceptional work, for the first time in our country, for the recovery of the water castle in Fetești Railway Station. In the absence of a previous experience to which to refer in our country, ing. Stănculescu imagined various modes of intervention adapted step by step to the behavior of the construction until the desired recovery is achieved.

A second aspect that I would like to emphasize is the originality of some of the solutions imagined by Prof. Ing. Ioan Stănculescu. Although the previous example would fit the same aspect, I will quote two others in which Professor Stănculescu's imagination was fully manifested.

The idea of using argillisation as a method of intervention in the failures of the foundation ground floated in the air. The engineer professor Ioan Stănculescu approached it fully and with remarkable success. He developed a technology for the preparation of clay pastes, stabilized with lignosulfidic waste, which allowed them to be initially pumpable but to gain enough consistency in time not to be eroded by water currents. With this process he obstructed the voids eroded in the foundation ground existing in the salt massif under the sanatorium from Ocna Sibiului. Thus obtained the removal of water currents that were leaching the ground and its stabilization. The sanatorium could be renovated and further commissioned.

In the USSR, towards the end of the '50s, the thermal treatment of the grounds, especially the loessial ones, was very careful, developed by Prof. I. Litnov from Kiev. Professor Stănculescu, in collaboration with academician Aurel Beleş approached this technique by going, on the one hand, on the idea of technological simplification, on the other hand, on the use in clay soils where the release of water was much wider than in loessial soils. The thermal treatment technique has been greatly simplified by replacing the fuel jet burners under pressure with gravitational drip on a support launched in the combustion drilling and by providing the necessary circulation for the evacuation of the vapors from the high humidity field through an adjacent drilling communicating with the combustion one. The method was known and appreciated abroad and was applied by professor ing. Ioan Stănculescu at the consolidation of the cliff at the Black Sea and, together with Ing. Gh. Iordache, at the stabilization of a water castle on loess in the town of Braila.

A third aspect to which I refer is the fearlessness that the solutions proposed by Professor Ing have frequently shown. Ioan Stănculescu. Again, I could start by referring to the water castle at Fetești. But he was followed by another 15-20 recoveries made most of the time or even all with the consultation of Professor Stănculescu. Between them stand out the rectifications of two blocks of flats with about 10 levels each. One of them is building K of Sos. Giurgiului, Bucharest. The building was funded on a network of beams and its inclination had manifested itself after several years of exploitation. The recovery carried out under the direct direction of prof. ing. I. Stănculescu involved a careful analysis of the succession of the intervention under construction from the side with minimal subsidence to the opposite one; excavation below the foundation beams on short sections with an almost pharmaceutical detail to determine the crushing of the



earth support remaining under the beam, thus initiating a gradual and controlled subsidence that led to the recovery of the construction.

Another example is a building in front of the Railway Station in Iasi that had begun to tilt severely, even during the execution. The phenomenon was due to the accidental and local wetting of the ground, which had caused the initiation of a process of its expulsion from under the foundation. The intervention was urgently necessary to prevent a catastrophe because the rate of inclination of the construction was worrying. Prof. eng. Ioan Stănculescu proposed and guided a rapid intervention through small diameter drillings filled with sand or with a mixture of sand with lime or cement, which would quickly increase the shear resistance of the plastic soil and block its expulsion. After stopping this process, the construction was recovered, which had as its only final shortcoming the fact that its reference level had been lowered by a few tens of centimeters. I believe that it is justified to estimate such solutions as a fear because it was a question of intervening under the foundation system and directing the movement of hundreds or thousands of tonnes of buildings.

I will end the list with the impression of ubiquity given to me by the meeting of the name of the professor Ioan Stănculescu in countless of the most important or difficult objectives, requiring the contribution of geotechnical engineering. I do not intend to make an exhaustive enumeration of them. But I also find conclusive an enumeration: the Danube-Black Sea Canal, with trenches up to 70 m deep and the decompression of some overconsolidated glomerular clays; large industrial plants such as the steel ones from Galați and Călărași, with deep foundations, with very high loads, located on loessial grounds; the large and difficult job sites for repairing the landslides of the Black Sea cliff or on the city territories from Iasi and Suceava; the Bucharest metro; the clarification of the causes that led to the loss of human life at the Certej - Săcărâmb tailing dam or the block of flats that failed in Arad.

The results obtained by the engineer professor Ioan Stănculescu are all the more remarkable because the vast majority of them were obtained in a period of over 40 years in which the builders in Romania faced contradictory conditions: on the one hand, a work program of overwhelming intensity; on the other hand, the restrictions generated by political and economic considerations, resulting in a delayed and restricted access to the progress obtained abroad, completed with the limitation to the access of publications from capitalist countries, for fear of cosmopolitanism or suspicion of initiating relations not approved by the security bodies. The fact that, in these conditions, the Romanian builders managed to solve with the means they had many problems as complex as those of their better "gifted" colleagues is a proof of competence and ingenuity. Appreciations that are fully justified with reference to the activity of the engineer professor Ioan Stănculescu.

Recently I was consulted for a building in the Fetesti Railway Station complex, affected by the uneven settlements of the foundation ground. On this occasion, I met 8-10 engineers, designers and builders from the CFR device, of very different ages. I was surprised to find that none of them knew about the history of the water castle located a few tens of meters away and which represents a milestone in geotechnical engineering in Romania. I remembered on this occasion the commemorative plaque mounted on the wall of St. Bălașa Church in Bucharest, which thanked academician Aurel Beleş and professor engineer Ioan Stănculescu for their contribution to the consolidation of the infrastructure of the abode. I wonder if such plates should not be mounted on the constructions that owe their survival through the intervention of the engineer professor Ioan Stănculescu. Limiting myself to the examples quoted above: the water castle in The Fetesti Railway Station, the block of flats K in Sos. Giurgiului Bucharest and the one from Station Square Iași.



Going further with the same thought, if one could not find the necessary means to re-edit some of the works of the professor Ioan Stănculescu, in which those who were not contemporaries to find suggestions and guidelines for effective solutions, even fearfulness, without being restricted by the thought that other colleagues who solve equivalent problems have a superior endowment.

Prof. Emil Botea (1911- 1990)



The following text is the English translation of the paper published by Prof. Iacint Manoliu in no. 2/2004 of the Romanian Magazine of Geotechnics and Foundations; the original text can be seen here in no. 2/2004 issue: [RRGF 2004-2.pdf](#).

We inaugurated this column of the magazine by publishing evocations regarding Professor Ioan Stănculescu. The family of Romanian geotechnicians was still living the pain caused by the separation, two years ago, of the one who, through his strong personality and exceptional achievements, deeply marked the geotechnics in Romania in the second half of the XXth century.

If the typographical space had allowed us, we should have published, at the same time, an evocation of Professor Emil Botea. Indeed, when it came to geotechnics and geotechnicians, the first names that were spoken in Romania of those years were: Botea and Stănculescu.

It was foreseen, however, that the 2nd issue of the magazine would appear on the eve of the Xth National Conference of Geotechnics and Foundations. That is why, knowingly, I left for the number 2 the evocation of Professor Emil Botea, who was the initiator of the first Conference, in 1967 and then followed the regular organization, every 4 years of the other editions, until the one from 1987.

For 34 years, Professor Emil Botea led the guild of geotechnicians in Romania, from 1966 to December 22, 1989 as president of the Geotechnics and Foundations Commission of the Construction Section of the of the National Council of Engineers and Technicians and from January 12, 1990 to February 23, 1990 as the first president of the new organization appeared after the Revolution, Romanian Society of Geotechnics and Foundations.

I think, especially at the young and very young, I ask permission to start evoking professor Emil Botea with some essential biographical data.

Professor Emeritus Engineer Emil Botea was born on March 8th, 1911 in Bucharest. After graduating from the Cantemir Voda High School in Bucharest, he attended the Courses of the Faculty of Civil Engineering of the Polytechnic School of Bucharest, which he brilliantly graduated in 1934. There followed a long and exemplary engineering career whose first stage was the activity carried out for 4 years as a designer at the CFR Bridges Directorate, during which time he elaborated numerous projects of bridges and culverts for the new lines under construction Ilva Mică - Vatra Dornei and Caransebes - Reșița as well as projects for the restoration or consolidation of some works of art on the existing lines. After his apprenticeship at the most technical of the railway construction departments, the young engineer was prepared to face other problems of even greater complexity. The occasion was the transition with august 1, 1938 in another large state administration, the Administration of Ports and Water Communication Routes (PCA) where he worked until June 1, 1949, successively occupying the positions of head of section, sub-chief of service, head of service and counselor. In 1941 there was an event that would decisively mark the entire further evolution on the professional and technical-



scientific realm of the engineer Emil Botea: the transition to the Geotechnical Service P.C.A. This service had been established at the initiative of the civil engineer of great competence and clairvoyance who was Anton Chiricuță, in order to meet first of all the requirements set by the construction of the regional grain silos, without a doubt, one of the largest construction campaigns undertaken by the state administration in the interwar period. In 1939, the first geotechnical laboratory in the country had been established at the PCA, and the new unit had to be framed with elements capable of solving in the country the problems that until that moment were solved exclusively through laboratories and design offices abroad. Among the young engineers that Anton Chiricuță and his collaborators chose to specialize in the field so unique in our country, at that time, of geotechnics, including through an internship at the most important geotechnical laboratory in Germany, was Emil Botea, who became since 1942 the head of the PCA geotechnical studies service.

On July 1, 1949, ing. Emil Botea was appointed chief geotechnologist within the General Directorate of the Danube-Black Sea Canal, leading directly the geotechnical studies until the interruption of the works in 1953. For this activity he was awarded the title of Laureate of the State Prize.

After the establishment, starting in 1949, of the design and research institutes attached to different ministries and departments, he collaborated intensively with many of these institutes, being consulted to solve the difficult problems posed by the foundation of constructions of a great diversity. At the same time, he was for many years a counsellor in the former central body of coordination and directive in constructions - CSCAS - approving, from the point of view of foundation solutions, the projects for a large number of investment works.

The technical activity has extended to works carried out by our country abroad. Thus, in 1960 he led for 6 months the field studies, the adaptation of the projects to the field and the execution of the foundations of the refinery installations and buildings delivered by our country to Gauhati, Assam state, in India. He also surveyed the foundation solutions for the objects of other refineries designed and executed by Romania in India, Syria, Pakistan and Turkey.

But the main component of the engineer Emil Botea's activity was, to the luck of dozens of generations of students, the teaching activity. It can be said that he had the vocation of education, to which he was dedicated from the first day of his career. Thus, between 1934 and 1941 he taught the course of Resistance of Materials at the School of Aviation Officers. Between 1941 and 1948 he worked as an assistant at the Polytechnic School of Bucharest, until 1943 at the Course of Resistance of Materials taught by Prof.C.C. Teodorescu, and from 1943 at the Course of Civil Constructions and Procedures of Foundations taught by Prof. Aurel Beleș. In 1948, after the Education Reform, he was appointed associate professor at the Department of Geotechnics and Foundations of the Bucharest Institute of Constructions, teaching at the Faculties of Civil and Industrial Constructions, Hydrotechnics, Bridges and Massive Constructions, and between 1953 and 1959 he was transferred in the same capacity to the Institute of Railways. In October 1959 he returned to the Institute of Constructions where, in 1961, he occupied by competition the position of professor, teaching at the Railway Department of the Faculty of Railways, Roads, Bridges and Geodesy, and at the Faculties of Civil and Industrial Constructions and Hydrotechnics. Between October 1, 1967 and July 1, 1975, the date of his retirement, he worked as head of the Department of Geotechnics and Foundations.

In 1974 Professor Emil Botea was awarded the title of professor emeritus.

In his scientific research activity, he leaned with interest and passion on some problems that he put in front of him the rich and varied engineering practice. "The study on the causes of the Medgidia silo settlement", published in 1945 in the Annals of the Ministry



of Communications and Public Works, a remarkable "case study" elaborated at the level that Geotechnics had reached worldwide at that time represents, dare I say it, a real cornerstone for the Romanian scientific research in the field of geotechnics.

I did not have the chance to have been a student of Mr. Botea, nor could I know him during my student years because, as I have shown, between 1953 and 1959 he was working as a professor at the Faculty of Constructions of the Institute of Railways, which was to merge in 1959 with the Faculty of Roads and Bridges of I.C.B. however, it was, but indirect, by going through the Geotechnics course in 1954, but also of the 2 lithographed volumes of a Foundation course, written in collaboration with Mr. Stănculescu, in a sui-generis organization of the material: vol. I - Foundation Systems, vol.II - Foundation techniques, which made some chapters (Piles, for example) to be found in both volumes.

I first met Mr. Botea in the fall of 1959, after he returned to the department. The first impression was extraordinary, and it would not change in the next 30 years. Elegant, but not with ostentation, and always with a bow tie instead of a tie (a younger colleague from the department, to whom she had been a teacher, told me how some students recorded in notes, at each course, the bow tie with which Mr. Botea came, to find, at the end of the 2 semesters, that is, 30 courses, that no bow tie had been worn 2 times!). A true gentleman, in attire and demeanour. In an era when the word gentleman had been banished from the Romanian language, Professor Botea obliged, as if, his interlocutor, to address him with "sir".

In the over 15 years that have passed since the first meeting until the retirement of Mr. Botea, so during the entire period in which we were colleagues of the department, we have often collaborated, but not on the didactic level (not being an assistant) but on different works on a contract basis that the department performed at the request of the beneficiaries. On one of these works, which was to stretch over a period of several years, I would like to stop.

I think it was the spring of 1961. It had been decided to increase the storage capacity of grains. Since the great silo building campaign of 1939 -1944, undertaken by the P.C.A. administration, nothing had been done. As Mr. Botea had worked for years at P.C.A., the beneficiary - the State Committee for The Valorization of Agricultural Products, naturally addressed the department to establish the conditions for the foundation of the new works. In the first stage, which had a maximum urgency, the extension of the old silos was to be made, that is, to build in the immediate vicinity of each one only a body of storage cells, which would use the installations from the elevator tower of the old silo. For this purpose, the new building was connected at the top, through a walkway, to the existing silo. To my great joy, Mr. Botea chose me to be his right-hand man to this work that was interesting, but not at all easy, with dozens of locations spread all over the country. The field recognition of how the old silos had behaved in operation, followed by a minimal but judicious program, additional investigations on the site of the extension, the establishment of the foundation solution, the verification of the execution and, finally, the measurement of the settlement, all these stages closely supervised by the professor, meant a great school. An important result was an article included in the volumes of the 6th World Conference on Geotechnics and Foundations in Montreal, in 1965, having as authors, together with Professor Emil Botea, Professor Hugo Lehr, my colleague Margareta Pătrîniche and the undersigned. In the article were presented and interpreted the observations on the subsidence of silo extensions. Mr. Botea attended the Conference and I remember how pleased he returned, not only for the contacts established and the things he found out but, above all, for the words of appreciation particularly favorable to our work that prof. E. de Beer of Belgium had expressed in his report by Prof. E. de Beer from Belgium.



I have been with Mr. Botea at many other works, each asking other problems, claiming other solutions. All this gave me the basis to write in the article that I published in no.7/ 1986 of the Construction Magazine, on the occasion of the teacher's 75th anniversary, the following:

"The ability to promptly grasp the essence of the problem, the patience and the respect shown for the views of the interlocutors, the concern for technical solutions justified by the clear calculation schemes, by the safest geotechnical data and by the execution conditions compatible with the possibilities of the construction contractors, a vast erudition and a documentation kept up to date, with great efforts and sacrifices and generously made available to others, here are some of the qualities that made professor Emil Botea an engineer professor appreciated and respected by numerous institutions and collectives."

Being his closest collaborator in the department, it was inevitable to assist him over several decades in the work he carried out with passion for the benefit of the guild of geotechnicians.

Mr. Botea had taken part in the World Conferences in Paris in 1961 and in Montreal in 1965 and simply suffered that Romania was not among the member countries of the International Society. He always gave me as an example Professor Stefanov from Sofia from whom he had learned that, at the London Conference in 1957, approached by the President of the International Society, Professor Skempton, he made a request on the spot, to which he attached a list of 20 members of the national society, and so Bulgaria had become a member of the International Society since 1957. For us, however, things were much more complicated, they had to be approved from the "higher forums", (I don't even remember how many justification memoirs I wrote for this purpose). Finally, after much struggle, Professor Botea managed to obtain in 1971 the admission of Romania to the International Society. At the ISSMFE council meetings in Moscow 1973, Istanbul 1975 and Tokyo 1977, Professor Botea was able to take the place he deserved, as a representative of Romania, along with the elite of international geotechnics.

The wretched '80s arrive. From the "cabinet 2" is emanated the aberrant decision: no dollar for contributions, for subscriptions, for books, which the "bodies" zealously implement. And thus, since 1980, Romania becomes arrears to the payment of the contribution to ISSMFE (in fact, a modest amount, of several hundred dollars per year). According to the statute, after two years of non-payment, the exclusion follows. The President of the 1981-1985 term of the ISSMFE, Professor V. de Mello of Brazil, intuitively what the causes are and is not in a hurry. But Professor Botea was increasingly worried. In 1985, at the Council held on the eve of the San Francisco Conference, Professor B. Broms of Sweden was elected president. An old acquaintance of ours had visited us in 1975, when he had attended a seminar held at the Palace Hall under the auspices of the U.N. I had met him then at the 10th World Conference in Stockholm in 1981. In April 1986, the new president embarked on a tour through all the countries of south-eastern Europe. The visit to Romania will be worth recounting more extensively on another occasion. Now I just want to show how the discussion with the president of ISSMFE went, in which I participated, on the thorny topic of the dues, a discussion that took place in Professor Botea's FIAT 1500, the only place where the teacher was sure that no microphones were installed. Mr. Broms begins by saying that it is 6 years since the dues were not paid and that the Executive Office will ask him at the next Council, in 1987, to vote on the exclusion of Romania. He is explained the reason for the arrears: the authorities no longer give the necessary currency. Mr. Broms comes up with a proposal: the Swedish Society of Geotechnics and Foundations is ready to bear the dues for the Romanian Society. It can't, it would be very bad, it could give way to the same kind of interpretations: why the Swedes paid, what services they hide behind such an offer, etc. Mr. Broms comes up with the



second solution: we exclude you, but the next day you re-establish yourself under another name and ask that we take you back, without imputing to you the arrears for the last 7 years. We show him that our problem is not the arrears but the fact that we do not receive the currency for the payment of the dues, even a dollar to be. Deeply disappointed, Mr. Broms understands that there is nothing to do, the Romanians are, indeed, in a desperate situation.

After a year and a half, in September 1987, the Dublin Council decided to exclude Romania. I don't think I've ever seen Professor Botea more upset than on the day when the letter that brought the sad, inevitable news was received.

End of December 1989. Mr Botea calls me and tells me that we must act in some way. We agree to adopt the Broms scheme no. 2: we are setting up a new company which, obviously, will not consider itself liable for the debts of the organisation under the former regime, and we are asking to be immediately received into ISSMFE. In the first days of January 1990, we meet several times to draft the statutes of the future society. Dr.Ing. Dan Dimitriu also participates, for whom Professor Botea had a special sympathy, and who will be the first secretary of the Romanian Society of Geotechnics and Foundations. The constituent assembly of the Romanian Society of Geotechnics and Foundations is convened for Friday, January 12, 1990 and is hosted in an amphitheatre of the Faculty of Civil, Industrial and Agricultural Constructions. Many geotechnicians from Bucharest are present, but also delegates from Timisoara, Iasi and Suceava. Colleagues from other cities send messages of adhesion. Professor Botea is unanimously elected president of the new society. On the same day we send professor N. Morgenstern, from Canada, president of ISSMFE and professor U. Smolczyk, from Germany, Vice-President for Europe, telegrams announcing the establishment of the company and requesting admission to ISSMFE. I promptly received an enthusiastic and very favourable response: the application will be submitted for approval to the next Council to be held in June 1991 at Forența, together with the proposal to erase the debt of the past and to exempt from the payment of the levy for the first two years. I visited Mr. Botea to take his letter. He was overjoyed, Romania re-entered the international geotechnical community.

It was our last meeting. A few weeks later, a sudden death snatched him from those who loved and esteemed him.

I had the sad mission to utter, at the mourning meeting, the word of separation and homage on behalf of the Romanian Society of Geotechnics and Foundations, of the Institute of Constructions Bucharest, of the Department of Geotechnics and Foundations. I ask for permission to quote from the words I have spoken, strangled by the pain of separation, on the man who was Professor Botea.

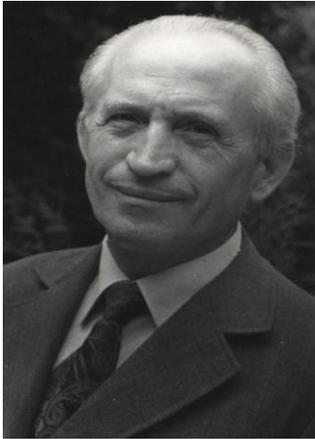
"A man of rare modesty. He consistently refused any celebration at any of the anniversaries that give the opportunity, by tradition, to the people of the school and of the guild to honour those who have conquered the love and appreciation of those around them. A man of great discretion and rare kindness. A man of utterly extraordinary distinction, of great dignity, in an age when this quality was neither cherished nor cultivated. He never made compromises, either moral or otherwise. A man animated by a deep spirit of righteousness, knew how to do justice when it was possible for him, and did not hesitate to rise up against the iniquities committed by others. A true patriot, who gave all his energy, until the last moment of his life, for the propagation of the Romanian school and technique."

This was Professor Emil Botea.



Prof. Marin Păunescu (1922 – 2006)

The following text is the English translation of the paper published by Prof. Virgil Haida in no. 2/2008 of the Romanian Magazine of Geotechnics and Foundations; the original text can be seen here: [RRGF 2008-2.pdf](#).



On September 22, 2006, Professor Marin Paunescu died, the one who, through his entire didactic, scientific and technical in general activity is among the prestigious teachers of the Faculty of Civil Engineering of the "Politehnica" University of Timisoara, as well as of the renowned specialists in the field of geotechnical engineering, being unanimously known both nationally and internationally.

Born on August 8, 1922 in the commune Ciocești – Bârla, Arges county, prof. Marin Păunescu attends the primary course in his native village, the industrial gymnasium course in Miriași, county Teleorman, and the high school course at the Technical School of Aeronautics in Mediaș. After working for a period of time in production as a foreman, he attended the courses of the Faculty of Civil Engineering in Timisoara, graduating in 1956, with the qualification "very good".

As a result of his exceptional professional training, he is retained in higher education as a teacher in the discipline of geotechnics and foundations within the graduated faculty, a discipline to which he devoted his entire subsequent activity and to which until 1970 he went through all the university stages, from assistant to university professor.

For 17 years, between 1968 and 1985, he was the head of the Department of Roads and Foundations, currently the Department of Geotechnical Engineering and Land Communication Ways, actually identifying himself with its founder, respectively with the person who contributed with all his being to the material and spiritual development of this unit, which became shortly after its establishment, one of the basic departments of the Faculty of Civil Engineering at the "Politehnica" of Timisoara, known and appreciated throughout the country.

The passion for the chosen profession, the scientific competence and the pedagogical mastery are the qualities that have permanently characterized the activity of Prof. Marin Paunescu, qualities that brought him the esteem and the well-deserved appreciation from the generations of students to whom he was a teacher, as well as from all those with whom he collaborated.

Permanently preoccupied with ensuring a high quality of the educational process, prof. dr. eng. Marin Paunescu elaborated 25 treaties and textbooks, published in central publishing houses or multiplied locally. Many of the aspects contained in the elaborated books and courses represent original contributions of the author and novelty elements, resulting from their own scientific research, being unanimously appreciated both by students and by the production engineers.

Professor M. Păunescu had a special contribution to the continuous raising of the quality of the educational process in the Faculty of Civil Engineering and through his sustained preoccupation with the development of the material base of the department, the endowment of the laboratories with the necessary equipment for the proper development of the educational process. Even the building where the headquarters of the current Department of Geotechnical Engineering and Land Communications Ways is located, is the result of the concerns and many unrests, without any fuss of the distinguished professor, of mobilizing the energy of the small team of collaborators with whom he



worked during the years 1968 – 1971, the construction being carried out exclusively through collaboration contracts with the former Construction Trust Montage Timisoara, contracts initiated and coordinated by Professor M. Păunescu.

The work done and the results obtained imposed professor M. Păunescu not only as a teacher, but also as a remarkable scientific researcher and engineer. Through his own scientific research activity, begun with the elaboration under the leadership of the eminent professor Hugo Lehr of the doctoral thesis, entitled "Contributions to the study of the process of firing and plucking of piles, tubes and piling" and publicly supported in 1963, continued and then developed by the team he formed and coordinated, he managed to create in Timisoara a real school of research in the field of using the vibration technique for geotechnical works and foundations.

The results of the research carried out are known and applied throughout the country as well as by many specialists from abroad, as a result of their publication in various specialized journals and their inclusion in some national norms of design and execution, elaborated by the geotechnical team from Timisoara.

An important role in stimulating the application in production of the results of the researches carried out was played by the books written by Professor M. Păunescu, among which it is mentioned: "The use of vibrations in the execution of some works of foundations" published at the Technical Publishing House in 1966, "The technique of vibration in matters of foundations" published at Ed. Facla in 1979, for which the author was awarded the "Traian Vuia" prize by the Romanian Academy. "Improving the weak lands for direct foundation", Technical Publishing House, 1980, "Molded walls and straps", Technical Publishing House, 1983, "Modern solutions for direct foundations", Ed. Facla, 1986, "Mechanization of works for the improvement of foundation grounds", Technical Publishing House 1990, "Modern solutions and technologies of industrialization of foundations for pillars with complex stresses", Marineasa Publishing House 2005.

Complete presentation of the long and prodigious scientific and technical-engineering activity of the Professor M. Păunescu, it is difficult to do in the conditions of a limitation as space, it is very rich, both qualitatively and quantitatively. Summed up his scientific research activity resulted in the elaboration of over 200 scientific papers as well as in 22 inventor's patents. He was awarded twice with the first prize and once with the second prize by the Ministry of Education for scientific research, as well as with the title of "highlighted university professor".

Also as a result of the recognition of his scientific merits, in 1974 Professor Păunescu was awarded the doctoral degree in the field of civil engineering. Under his competent guidance, a number of 28 PhD students managed to elaborate theses unanimously appreciated by specialists and to obtain the title of "doctor".

Professor Marin Paunescu was an honorary member of the Romanian Society of Geotechnics and Foundations, as well as a member of the International Society of Earth Mechanics and Foundations and of the Academy of Scientists in Romania. Also, due to his scientific and technical-engineering competence, over time he was part of and worked in numerous technical commissions for constructions, established at governmental and departmental level.

After his retirement, in 1987 and until the end of his life in 2006, Professor M. Păunescu continued to work in the Department of Geotechnical Engineering and Land Communications Ways, as a consultant professor, remaining the same real support for the geotechnical team and submitting the same perseverance in the management of the doctoral activity.

Through everything he has done for the propagation of the technical higher education of constructions in Timisoara, as well as for the scientific contribution, brought to



the development of geotechnics in Romania, Professor Marin Păunescu deserves the full consideration and homage of both his contemporaries and future generations.

Prof. Silvan Andrei (1924 – 2007)

The following text is the English translation of the paper published by Prof. Sanda Manea in no. 1/2008 of the Romanian Magazine of Geotechnics and Foundations; the original text can be seen here: [RRGF 2008-1.pdf](#).



He was born on August 15, 1924 in Costiceni, Hotin.

After graduating in 1943 from the N. Bălcescu High School in Braila, he attended the Polytechnic School in Bucharest – Faculty of Civil Engineering, which he graduated in 1948.

Since 1950, he has devoted his activity to the problems of geotechnics and foundations, first at the Geotechnical Division of the Institute of Construction Design and then at the Institute of Studies and Prospecting, as chief engineer of studies and head of workshop.

In the period 1954-1957, he completed a full-time doctoral internship in the specialty of Foundations, at the Institute of Constructions Bucharest, dealing with the problem of water drainage in fine-grained soils. On this occasion, he imagined and built, for the first time in the country, the equipment for determining the suction, the wetting heat, and the isothermal sorption of the hydrophilic porous bodies, used by numerous laboratories, and cited in the specialized literature in the country and abroad.

After returning, in 1957, to the Institute of Studies and Prospecting, in addition to the activity of guiding geotechnical studies, as a specialist engineer, he initiated an action to modernize the equipment for collecting and testing soil samples, which resulted in the first device for collecting undisturbed samples of sand below the groundwater level.

At the Foundation Research Department established in 1958 at INCERC, he elaborated new methods regarding the determination of the intensity of the interaction between the constituent phases of the soils, the migration of water in the unsaturated soils, the influence of the water content and relative density conditions on the mechanical properties of the soils and on the volume variations, the monitoring of the moisture state with the help of resistive doses made of plaster, the causes and the evolution of the phenomenon of structural collapse of soils with macro-voids by wetting, the tensile strength of the soils.

The results of the research regarding the hydric properties were presented in the doctoral thesis *Water drainage from the fine-grained soils* presented in 1963, appreciated also abroad. (A synthesis of the doctoral thesis was published in 1966 by the Eyrolles Publishing House in France and was awarded the prize of the Ministry of Education and Education).

In order to facilitate the application of the results in practice, he published, in 1967, the monograph *Water in unsaturated lands – a synthesis work of the knowledge regarding the liquid phase in the hydrophilic porous bodies acquired in different fields: geotechnics, soil science, building materials, engineering geology and drying theory*.

In order to improve the methods of calculating the foundation ground, Prof. Silvan Andrei initiated and led the action of monitoring the settlements of over 250 constructions, undertaken by INCERC during 1959-1967, results that were the basis for the improvement of the respective standards in our country. On the same line were registered the research regarding the geotechnical zoning of the country's territory, the laboratory and field studies regarding the clays with large swellings and contractions and the soils sensitive to wetting.



In the field of foundations, he initiated and led, starting with 1958, actions for the implementation in our country of modern procedures: wellpoints, driving piles by vibration, execution of drilled piles with enlarged base by explosions, etc., some of the researches being materialized in specialized norms.

Between 1966-1967, he participated as a delegate of our country, in the works of the commissions of specialists in geotechnics and foundations in the CAER countries.

She started her teaching activity in higher education in 1949 at the Bucharest Institute of Constructions, as an assistant. Since 1964, as lecturer, he has taught the courses of Geotechnics and Foundations and Hydrogeology. In 1967 he became an associate professor, and in 1971 he became a professor at the Department of Geotechnics and Foundations, teaching, besides the basic course, the disciplines rock mechanics and special foundations at the Faculty of Hydrotechnics. His lessons, of a high scientific and pedagogical level, have formed numerous specialists who esteem his name.

In addition to the didactic activity, Prof. Silvan Andrei has also carried out a sustained scientific research activity and technical assistance of the production.

The performed research has led to the elaboration of new methods of stability analysis, which more faithfully model in relation to the classical methods the real behaviour of the heterogeneous earth masses.

Prof. Silvan Andrei and his collaborators have elaborated an original method of systematization, storage and reuse of geotechnical information based on taking into account the main factors that determine the behaviours of the earths, their nature characterized with the help of "fingerprints" and the state of humidity and relative density – a method that leads to a truthful forecasting of the volume and humidity variations and thus to the estimation of settlements under the action of mechanical and water loads.

Prof. Silvan Andrei was also preoccupied with introducing geotextiles to foundations and earth works, obtaining interesting results in studying the water properties of these new materials, for which he was elected member of the Technical Commission for Geotextiles of the International Society of Geotechnics and Foundations.

Prof. Silvan Andrei has published over 120 articles, monographs, textbooks, courses, translations, etc., of which we mention the books: Course of Geotechnics and Foundations; Rock mechanics – the first work of its kind in the country for builders. He also participated in numerous international congresses, conferences and symposiums of geotechnics and foundations and soil science in the USSR, France, England, Finland, Germany, Poland, presenting communications and sometimes leading the works of some sections in the field (Brighton 1979, Helsinki 1983).

From 1974 to 1976, he taught at the University of Constantine, Algeria. Since 1977 he has led Romanian PhD students and foreigners in the field of geotechnics and foundations.

By conducting original studies and research, he solved numerous problems of construction practice and enriched the science of geotechnics and foundations in our country.

Affirmed in the science and technique of constructions, Prof. Silvan Andrei is among the most valuable teachers in the higher education of constructions.

An example of work, honest, principled, with a lot of common sense and of a rare modesty, prof. Silvan Andrei brought honour to the profession to which he dedicated himself with exceptional results.



Prof. Ion Antonescu (1921 – 2007)

The text below was published in the volume *Personalities in constructions* edited by Prof. Hristache Popescu.

He was born on November 3rd, 1921, in Galati, where he attended the Vasile Alecsandri High School. In 1948, he graduated from the Faculty of Constructions within the Polytechnic of Bucharest.

After an internship on site in Craiova, he continued his engineering activity at the Geotechnical Section of the Institute of Metallurgical Design Bucharest, at the establishment of which he participated, leading the studies and prospecting for the design of foundations from numerous industrial units, including the Hunedoara and Resita steel plants, the Carbochim Cluj-Napoca plants and the Braila Progress, etc.

In parallel with the design, starting with 1950, he worked in research, at the Institute of Applied Mechanics of the Academy and then at the Institute of Hydrotechnical Studies and Research, being one of the founders of the first research team in the field of geotechnics in our country. Here he successively held the positions of scientific researcher, principal scientific researcher, head of laboratory and head of department. Through the researches carried out, he brought important contributions in the fields of: the composition and geotechnical properties of the soils: mineralogical composition, water disintegration, penetration, adhesion, electro-osmotic characteristics, shear resistance, etc. – researched in the laboratory and by field experiments; studying the specific properties of clays with high swells and contractions and establishing technical measures to prevent degradation of constructions and reclamation works located on such grounds; introduction of chemical and electro-chemical methods of soil consolidation, silicization and electro-silicization. Their application to the consolidation of foundations and to the recovery of numerous civil and industrial constructions, as well as to the treatment of fine sands and aquifers in mining galleries; the behavior of the macropores soils and the determination of the solutions for the consolidation of the foundations of the constructions on these formations. The results of the research made possible the design and execution of irrigation systems on loess, developed on hundreds of thousands of hectares, with the prevention of negative effects due to the sensitivity to wetting of the ground. The appreciation of his scientific achievements was confirmed by the awarding of the Romanian Academy Prize in 1966, for the studies regarding the behavior and consolidation of the land sensitive to wetting in Dobrogea and Baragan.

He started his activity in higher education in 1949 at the Institute of Constructions Bucharest, as an assistant in the discipline of Geotechnics and foundations. After obtaining the scientific title of doctor engineer, in 1971, with the thesis: Contributions to the study of the behavior of macropores soils in reclamation works, he became associate professor at the Faculty of Hydrotechnics.

Prof. Ion Antonescu has done a rich research work, bringing meritorious contributions to the Danube – Black Sea Canal, the Midia petrochemical plant, the Romanian synthetic yarn factory, the lignite exploitations in Oltenia, etc.

He participated in various international meetings, consistently promoting the results of Romanian science and technology. Thus, he was one of the initiators of the section dedicated to lands with unstable structure at the VIth International Congress of Geotechnics and Foundations in Montreal (1965) and took part in the third International Conference on Expansive Clays in Haifa (1973).



He undertook numerous technical assistance actions, expertise and provided specialized consultations in the country and abroad (central slaughterhouse in Baghdad, an oil objective in the Yemeni Republic, etc.). In 1982, he held a cycle of postgraduate courses for civil engineers at Algiers. He was a member of the Foundation Commission of the Central Institute for Research, Design and Construction Directive.

Prof. Ion Antonescu was also distinguished by a rich publishing activity, being the author or co-author of over a hundred papers: courses, monographies, articles, and communications at scientific events in the country and abroad, among which we mention a reference work, the book *Loess in constructions* (in collaboration), 1971.

He was permanently preoccupied with spreading among specialists the new achievements in the field of geotechnics and foundations, through conferences and by publishing over 25 synthesis and translation papers. He elaborated the specialized terms from the Romanian Technical Lexicon and from the Lexicon of Architecture and Constructions. For over 20 years, he was a specialist reviewer at *Applied Mechanics Magazine*.

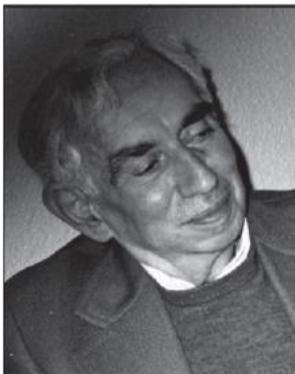
He was a founding member of the Romanian Commission of the International Association of Soil and Foundations.

Through his entire didactic, technical, and scientific activity he proved himself an important specialist, with significant contributions to the development of the science of geotechnics and foundations in our country. Also, through his participation in international scientific meetings, technical assistance, expertise, specialized consultations, postgraduate courses abroad, he made known the scientific and technical achievements of Romania.

A valuable teacher and researcher, he has imposed himself through works that honor him, being an example of work and professional dedication.

Dr. René – Jacques Bally (1925 – 2013)

The following text is the English translation of the paper published by Prof. Iacint Manoliu in no. 1/2014 of the Romanian Magazine of Geotechnics and Foundations; the original text can be seen here: [RRGF 2014-1.pdf](#).



The evening of December 10th brought sad news for the geotechnical community in our country: the death of Dr. Ing. René Jacques Bally.

René Jacques Bally was born in Bucharest on September 16, 1925. He graduated from the Faculty of Constructions of the Polytechnic School in Bucharest in 1948. Between 1948-1949 he worked as an engineer on the site Salva - Vișeu and then at IPROMET Bucharest.

After an internship at the Institute of Railway Engineering in Moscow, between October 1949 and March 1953, he obtained the scientific title of "candidate in technical sciences", equivalent to the title of doctor engineer. The thesis, elaborated under the guidance of professor R.V. Rjanitîn, approached the problem of improvement of earths by electrical methods.

After returning to the country, he was appointed head of the newly established geotechnics team from the Institute of Applied Mechanics of the Romanian Academy. He remained in the leadership of this team for 39 years, until his retirement, moving with him, following repeated reorganizations, at the Institute of Studies and Hydrotechnical Research, at the Research Institute for Land Improvement, at the Institute of Environmental Engineering, occupying the functions of head of laboratory, head of section, deputy scientific director. The team formed and developed by R.J. Bally has established



itself over the years as one of the most important research centers in our country in the field of geotechnical engineering.

Thus, research was undertaken on the microstructure of clays using the electron microscope and the infrared spectrograph, radiometric prospections to investigate the displacements and migration of water in the earth masses, measurements on the vertical and horizontal displacements in dozens of dams, levees and earth masses, calculations on the load bearing of the ground and on the infiltrations undertaken right from the beginning of construction in the country, at the beginning of the 60's, of the first computers, complex investigations regarding different technologies of earth improvement, the first studies in the country on the use of geosynthetics. The name of dr. ing. R.J. Bally is linked to the introduction in Romania of the electrosilicization method, with application to the specific weak soils from the lignite mines Filipeștii de Padure and Ceptura and to the wetted loess, such as at the hospital in the Hippodrome district of Braila, of the introduction of the injection technology with manchettes tubes, the introduction of the hard silica gel to improve the fine sands and silty sands. The teams led by R.J. Bally participated in extensive research programs on the loessial soils sensitive to wetting, to the irrigation systems in Baragan and Dobrogea, to the housing complex in the Tiglina neighborhood of Galati, to programs regarding the weak soils on which the dams in the Danube floodplain were erected, to studies regarding the consequences on the ground of the earthquake of March 4, 1977.

Alone or in collaboration, Dr. R.J. Bally elaborated 6 monographies that represent as many reference titles in the specialized literature in our country, regarding the electrical methods of improving the lands, the loess in constructions, the stability of the agricultural slopes, the dams and levees made of local materials on weak foundation grounds, the injection of the grounds, the use of stable self-strengthening suspensions in the geotechnical engineering.

After retiring in 1992, R.J. Bally continued to work as a consultant and technical expert and was a permanent employee of the Stizo Special Foundations enterprise.

At the sad solemnity that preceded the cremation on December 12, 2013, I was given the mission to pay homage to the Romanian Society of Geotechnics and Foundations. I mentioned on that occasion that R. J. Bally was among the founding members of the Romanian Society of Soil Mechanics and Foundations, founded on January 12, 1990, of which the board of directors was part in the following decades.

As president of S.R.G.F. for 16 years, between 1996 and 2012, I felt dr. R.J. Bally close to us in all the actions undertaken by the society, including the organization in our country of 4 important international conferences.

At the same solemnity, I wanted to pay homage to the 1957 promotion of the Faculty of Civil and Industrial Constructions of the Bucharest Institute of Constructions, to which Mr. René Jacques Bally taught one of the basic courses of the engineering and construction team, the Geotechnics and Foundations course. I met him in the spring of 1955. He came with the aureole of a brilliant PhD recently completed at a prestigious university in Moscow. He impressed us with lessons characterized by clarity, rigor and depth, but also by the warm relationships he wanted to establish with the students from whom they did not actually separate him until 8-9 years. He set up a student scientific group to which I had the chance to enroll, which gave me the opportunity to meet him in another position, that of head of the geotechnical laboratory of the Institute of Applied Mechanics of the Academy.

Arriving myself to work in the field to which he wanted to approach me, I met over the years Mr. Bally, leader of the most important research unit in our country in the field of earth mechanics and geotechnical engineering, but also an active participant in the life of the guild, in its various forms of organization, before and after December 1989.



A man of a high scientific capacity, of a vast culture, of exemplary kindness and probity, so he was known and thus will be reminded René Jacques Bally.

Prof. Nicolae Boti (1931 – 2013)

The following text is the English translation of the paper published by Prof. Vasile Grecu in no. 2/2014 of the Romanian Magazine of Geotechnics and Foundations; the original text can be seen here: [RRGF 2014-2.pdf](#).



Professor Nicolae Boti, with a special university career, is enrolled as a prominent, prestigious figure among the civil engineers from Iasi, as well as among the specialists in the field of geotechnical engineering and tunnels.

His presence was a tonic one, full of vigor, being appreciated by his colleagues and by the students both as a teacher and as a man.

I had the great privilege of being with Professor Nicolae Boti for 45 years, since 1969 when I graduated from the Faculty of Constructions in Iasi and I was assigned to higher education as a teacher, until 2013 when he left us quite quickly.

In the 45 years spent with the distinguished professor Nicolae Boti, participating in almost all the important events in his life, I managed to discover special qualities that he had, namely: that of helping those who needed help and the humanity he proved throughout this period.

He managed to maintain a balance within the discipline of Geotechnics and Foundations between its members, always having the role of a fair and impartial referee.

He was born on December 1, 1931, in Braila, the day when Romanians everywhere celebrate the great union, a day that marked him all his life, being a brother for younger colleagues, always standing out as a tonic presence full of vigor.

He attended primary grades I-IV at School no. 7 in Braila during 1939-1943, after which he attended high school grades I-VIII, at the theoretical high school "Nicolae Balcescu" in Braila, during 1943-1951.

In the period 1951-1956 he attended the courses of the Faculty of Constructions at the Polytechnic Institute "Gheorghe Asachi" from Iasi.

The student years have occasioned the future professor Nicolae Boti not only the possibility of accumulating the necessary targets for the future specialist, but also the assimilation of some life formulas, of some imperatives necessary for becoming a human being; understanding that in the profession of builder it is not enough to be a very good specialist, but it is equally important to be HUMAN.

After graduating from the faculty, he was employed within the technical service of the City Hall of Iasi, as a main engineer, executing road works, consolidations of slopes and buildings, bridges, retaining walls, underground works with household municipal equipment and underground constructions.

Transferred in the interest of work, on March 1, 1967, to the Department of Systematization architecture and design of constructions (DSAPC) Iasi, to the geotechnical workshop, as main design engineer, he is entrusted with the management of the experimental works on the terrace Orogari in order to establish the optimal solutions for foundation.

Starting with 1963 he was employed as a substitute assistant at the Faculty of Constructions in the discipline of Geotechnics and Foundations.

In 1969 he was promoted as teaching assistant, passing with the basic position in higher education, so that in 1973 he was promoted to the post of lecturer.



In 1975 he publicly defended his doctoral thesis "Contributions to the study of the contractile lands of the foundation layers in the area of Iasi city" under the supervision of the late professor Tudor Silion.

In 1980 he was promoted, through competition, to the position of associate professor and in 1991 he was promoted by competition a tenured university professor, a post he honored for 11 years until his retirement in 2002.

As a result of the recognition of his scientific merits, in February 1995 he was nominated a scientific doctoral supervisor, in the technical field, specializing in Communication Ways, Bridges and Tunnels.

In his teaching activity, hated over the years, Professor Nicolae Boti has given a special importance to his professional training, through a permanent connection to the renewals occurred in the profession to which he was bound souls and which he loved very much.

Having a constant preoccupation with raising his level of training, he has always used his motto- only by always learning, you can teach others.

He elaborated eleven books and university courses published in central publishing houses or multiplied locally, totaling a number of 2364 pages, these being unanimously appreciated both by his students and by the engineers in production.

In addition to the very rich teaching activity, which was ugly over fifty years, Professor Nicolae Boti was involved in a sustained research activity, with a total of a hundred titles scientific papers, these being published in Magazines in the country and abroad or in the volumes of the scientific sessions organized at national level.

The results of these research are known and applied in the country by specialists as a result of their publication in various specialized journals.

Having the quality of technical expert and project verifier at Af exigency – Resistance and stability of the foundation ground of the constructions and of the earth massifs and A4 – Resistance and stability for road constructions, roads, aviation tracks, bridges, tunnels, Professor Nicolae Boti was entrusted with the verification of the tunnels of national importance: Homorod with a length of 5,130 m and Ormeni of 6.913m. The Homorad Tunnel is located along the Brasov - Sighisoara section of the Brasov - Sighisoara railway line, which is part of the railway network of the IV Pan European corridor, for the circulation of trains with a maximum speed of 160 km/h.

Being appreciated and recognized as a good pedagogue, ingenious researcher and a very good organizer, Professor Nicolae Boti was elected to the organizing committees of various scientific manifestations, organized in the field of geotechnics and foundations in Iasi and other localities in the country, such as:

- member of the scientific and organizing committee of: The First National Conference of Underground Constructions, with international participation, Iasi 1993, The IInd National Conference of Underground Constructions, Brasov 1996, The IIIrd National Conference of Underground Constructions, Petrosani 2000, and President of the Scientific Committee of the IVth National Conference of Underground Constructions, Timisoara 2003. He was a member and held management positions at several scientific companies at national and international level
- Romanian Association of Tunnels (ART), vice-president of the Romanian Association of Tunnels (ART) 1993-2003, President of the Romanian Association of Tunnels (ART) 2003-2006;
- member of the Romanian Society for Geotechnics and Foundations;
- International Tunneling Association (ITA);
- International Society for Soil Mechanics and Geotechnical Engineering, ISSMGE (1991).



Professor Nicolae Boti died at the age of 82, on December 30, 2013, leaving on the penultimate day of the year in another world.

Those who knew him who have benefited greatly from his qualities as a man and as a specialist in the field of Geotechnical Engineering pay him a respectful tribute, keeping alive in memory his personality and his noble soul.

Prof. Iacint Manoliu (1934 – 2018)



The text below was published by ISSMGE as an obituary (it was written by Prof. Sanda Manea).

The Romanian Society of Geotechnical and Foundation Engineering (RoSGFE) is announcing with deepest regrets that Professor IACINT MANOLIU passed away on 12th of June, 2018, at the age of 84. This was a difficult moment for our society.

Professor IACINT MANOLIU was a founding father of the Romanian Society of Geotechnical and Foundation Engineering and will remain in the heart of this professional family.

In this regard, we present a chronological synthesis of his activity over 60 years, on a national and international level.

IACINT MANOLIU was Emeritus Professor at the Technical University of Civil Engineering Bucharest. He was born on April 5, 1934 in Botosani. He attended a High School in Bucharest, graduated in 1952, and the Faculty of Civil and Industrial Buildings of the Bucharest Institute of Civil Engineering (ICB), graduating in 1957. He became member of the Department of Geotechnics and Foundation Engineering of ICB in February 1959, occupying successively the positions of Head of Laboratory, Assistant, Lecturer (1975), Professor (1982), Consultant Professor (2004) and Emeritus Professor (2012).

In 1974 he obtained his PhD title, after presenting at ICB the thesis entitled "Behavior of piles subjected to transverse loads". He was the main researcher in a joint venture project of the Department of Civil Engineering at the University of Texas at Austin and a design institute (IPCUP) from Bucharest on offshore platform piles, between 1976 and 1986.

He was the author and co-author of more than 100 books, textbooks, communications, papers and prescriptions in the field of geotechnical engineering and higher technical education.

Since 2004 he was a correspondent member of the Academy of Technical Sciences in Romania.

In 2008, the "Gheorghe Asachi" Technical University Iasi awarded him the title of Doctor Honoris Causa.

He has held leading positions at the Institute of Civil Engineering Bucharest (from 1995 Technical University of Civil Engineering in Bucharest): Vice-Dean (1972-1976) and dean (1976-1984) at the Faculty of Civil, Industrial and Agricultural Construction, Vice-Rector (1990-2000) and President of the Council for Cooperation and International Relations (2000-2011).

He was a founding member of the Romanian Society for Geotechnical and Foundation Engineering and served several roles in the society as vice-president between 1990-1996 and President of the society between 1996-2012. Since 2012 he was the Honorary President of the RoSGFE. He initiated the publication of the Romanian Magazine of Geotechnical and Foundation Engineering, since 2004.

Between 2007-2011 he chaired the European Technical Committee 31 "Education and Training in Geotechnical Engineering" of ISSMGE (International Society for Soil Mechanics and Geotechnical Engineering).



Since 1990, he has initiated and coordinated numerous projects in the field of higher education funded by the European Commission, including the EUCEET Thematic Networks (European Civil Engineering Education and Training) developed between 1998-2010. Since 2008 he was Secretary General of the EUCEET Association.

He has worked as a European expert in the Tuning-Latin America (2006-2012), Tuning-Georgia (2008-2009) and Tuning-Russia (2011-2013) projects.

Since 2008 he was an international expert for C.T.I. (Commission des Titres d'Ingénieurs, France).

Between 1994-2005 he was Vice-President of E.C.C.E. (European Council of Civil Engineers), and since 2003 has led the permanent Education & Training Working Group of E.C.C.E.

He was a founding member of E.N.A.E.E. (European Network for Accreditation in Engineering Education) and since 2008 was a representative of E.N.A.E.E. of ARACIS (Romanian Agency for Quality Assurance in Higher Education).

We believe that the living testimonies of his work dedicated to the field of Geotechnical Engineering, namely his books, researches and projects, all of which serve as current technical norms that govern the prescriptions in Romania, bear his mark, along with the theories, the methods of calculation and the newly introduced and promoted in our country, and most importantly with the specialists formed under his guidance as a Professor in TUCEB, thus creating the "geotechnical engineer".

Professor Iacint Manoliu has been and has remained our "open door" to Europe and the world, a valid unlimited passport. The name of Manoliu in the international geotechnical community is identified with Romania.

The de facto founder of the RoSGFE, leading its destiny permanently, our Honorary President, will remain forever for us and will pass further to future generations a model of modesty, fairness, professionalism and patriotism, as a complete intellectual and lover of fine arts, and above all a MAN.

We are grateful for Professor Iacint Manoliu's contribution in our lives and we ensure that he will never be forgotten.

We sincerely appreciate the international geotechnical engineering community for the emotional messages sent.

Prof. Nicoleta Rădulescu (1951 – 2019)



Professor Nicoleta-Michaela Rădulescu graduated in 1975 the bachelor's courses at the Institute of Constructions Bucharest, and in 1998 she received the title of Doctor of Engineering Sciences, within the same University.

Between 1975 and 1979 she worked as engineer at Trust Energo Constructia and in 1979 she started her teaching career within the Department of Geotechnics and Foundations with basic didactic norm within the Faculty of Civil, Industrial and Agricultural Constructions, successively occupying all the teaching positions, namely: assistant professor (1979-1990), lecturer (1990-1999), associate professor (1999-2001) and university professor with doctoral supervising (2001-2019). At UTCB, Professor Radulescu held the position of Director of the Department of Engineering in Foreign Languages (2001-2007) and the position of Dean of the Faculty of Engineering in Foreign Languages (2007-2012).

During her teaching and research career, she has published over 50 scientific articles, communications, studies, books and teaching materials of which: 7 articles rated



ISI Thomson Reuters, 11 BDI articles and 19 unindexed articles. The courses and teaching materials are published in: international publishing houses – 7 books, national publishing houses – 8 books and in electronic format – 2 books.

She was granted internships at Politecnico di Torino in 1992, LCPC Paris in 1993, TU Berlin in 1994 and City University London in 1994.

In 1999 she was invited Professor at ENPC Paris and in 2000 at Politecnico di Torino.

Within the Romanian Society of Geotechnics and Foundations she held the position of Secretary General between 1998 and 2012 and was an active member since 1990 until her disappearance. She was an active member of the International Society of Geotechnics and Foundations, between 2013-2014 she was appointed member of the Executive Committee of the International Society, thanks to her impressive international activity.

She was also a member of the following ISSMGE technical committees: TC 38 "Soil Structure Interaction" ISSMGE (2001 - 2009), ERTC 3 "Piles" ESSMGE (2006 - 2008), TC18 "Deep Foundations" ISSMGE (2007 - 2010), TC212 "Deep Foundations" ISSMGE (2010 - 2013).

Her activity as Secretary general of SRGF was remarkable, she was working actively both at SRGF and UTCB for laying the bases of international cooperation in Geotechnical Engineering, together with Prof. Manoliu. She was active in organizing many international and national scientific events such as:

- Secretary General of the Organizing Committee of the International Conference Geotechnical Engineering Education and Training, Sinaia 2000
- Secretary General of the Organizing Committee of the EUCEET General Assembly, Sinaia 2001
- Secretary General of the Organizing Committee of the International Conference 3rd iYGEC, Mamaia 2003
- Secretary General of the Organizing Committee of the International Conference education and training in Geo-Engineering sciences, Mamaia 2008
- Member of the Organizing Committee of the EUCEET General Assemblies: Athens 2003, Malta 2004, Paris 2005, Santander 2007, Warsaw 2008, Paris 2009

She was member of the Executive Committee of the European thematic network EUCEET (European Civil Engineering Education and Training) (2000 - 2010), founding member of the European Association EUCEET (2007) and member of the Executive Committee of the European Association EUCEET (2007 – 2011).

Prof. Radulescu was also member of many other international cooperation programs as:

- SOCRATES ERASMUS – EUCEET II + III, 2001 – 2013
- Continuing Educational and Technology Transfer in Civil Engineering – CETTCE, TEMPUS, 1997 – 2000
- Civil Engineering Schools Cooperation – CESCOOP, TEMPUS, 1996 - 1997
- European Network of Civil Engineering Schools and Laboratories – CESNET, TEMPUS, 1995 – 1998
- Continuing Education and Research Programme for Romanian Industry – CEREPRO, TEMPUS, 1995 - 1996
- Advanced Geomechanics and Geotechnology related to Civil Environmental and Earthquake Engineering – JEP 2776, TEMPUS, 1991 - 1995

Together with Prof. Manoliu she worked and published many papers in the field of education in civil and geotechnical engineering.



In terms of technical activity, Professor Rădulescu has been since 2003 a Project Verifier and Technical Expert certified for Af exigency by Public Works Ministry, as well as A1 certified Technical Expert since 1996.

In the doctoral thesis Prof. Radulescu studied the bearing capacity and deformability of deep foundations on barettes and along her important technical and academic career the topic of deep foundations remained the main one, bringing new developments for piles, micropiles, barettes, but touching also diaphragm walls, soil – structure interaction etc.

Prof. Rădulescu coordinated the elaboration of important Romanian technical norms: NP 112 – Technical norm for geotechnical design of shallow foundation (editions 1998, 2004 and 2014), NP 123 – Technical norm for geotechnical design of pile foundations (2010) and P106 – 1985 – Technical instructions for the design and execution of barettes used for foundation. She also participated at the elaboration of other technical documents among which the Guide for geotechnical design GP 129:2014 (for the application of Eurocode 7), with it earlier edition from 1996 or NP 074 (editions 2007 and 2014) for geotechnical investigations.

She also had technical activity for some significant constructions, as pile foundations for offshore platforms, Piata Victoriei Tower, Novotel Hotel, Piraeus Bank, BCR Regina Elisabeta, all in Bucharest.

Even after her retirement she continued to be active in SRGF, by delivering lectures in the framework of formation courses organized for SRGF members. In 2019 she was awarded as Professor emeritus form the Technical University of Civil Engineering of Bucharest, just few weeks before she passed away.

Prof. Nicoleta Rădulescu was an important pillar of the geotechnical community, being involved in all its activities, a very committed and devoted person, her premature departure at only 68 before Christmas 2019 left a significant void and saddened many people both in Romania and worldwide.

Some early works

In the Romanian Magazine of Geotechnics and Foundations Prof. Manoliu held a column devoted to Files from the history of Romanian Geotechnics, describing early technical solutions for various constructions.

Some of them are presented here below.

GEOTECHNICS APPLIED TO THE CONSTRUCTION OF THE C.F.R. ADMINISTRATIVE PALACE IN BUCHAREST – Prof. Iacint Manoliu



This text has been published in the Magazine of Geotechnics and Foundations no.1/2004 – here is the original issue in Romanian language: [RRGF 2004-1.pdf](#).

The beginnings of geotechnics in Romania are usually associated with the establishment in 1939 within the Administration of Ports and Water Communication Ways, at the initiative of eng. Inspector General Anton Chiricuță, of the first geotechnical laboratory, intended for the beginning to support the great



campaign launched in 1938 to build 78 grain silos, spread throughout the country.

In the Bulletin of the Romanian Institute for Concretes, Constructions and Roads no. 7/12, July/December 1941, the text, with the above title, of a communication presented at the 47th meeting of the I.B.C.D. of May 25, 1939, under the chairmanship of Rector N. Vasilescu - Karpen, is inserted. This is, of course, one of the first scientific papers in the field of geotechnics and foundations that saw the light of print in Romania.

The collective of authors is, by itself emblematic: engineer Th. Atanasescu and geologist dr. St. Cantuniari.

The editorial space does not allow a more extensive presentation of the 1939 communication of Mr. Atanasescu and Mr. Cantuniari. We are therefore limited to pointing out more relevant issues. In some places, in order to enjoy the way of expression and even the spelling, there were given quotes from the work:

According to the initial project, in 1936, the C.F.R. palace was supposed to be a 22-storey reinforced concrete structure with a height of 83,7 m, covering an area of (82,5 x 109) m².

After the first investigations on the ground, which saw the risk of large settlements, it was decided to change the project by replacing the reinforced concrete structure with a metal structure, by reducing the height to 48.2 m and the increase of the surface in the plane to (106x109) m², in order to be able to limit the pressure on the ground to 2.5 kg/cm².

Understanding the importance of ground conditions for the construction of a building of the magnitude of the C.F.R. Palace, the C.F.R. administration sent at the end of 1935 two engineers, including eng. Th. Atanasescu, in Paris and Vienna, on a study trip to geotechnics. In the spring of 1936, in a conference held at the Circle of Railway Engineers, in the premises of the Polytechnic Society, eng. Th. Atanasescu showed how is studied the engineering of the foundation ground in Western countries. Following his report C.F.R. Administration decided to proceed to a serious investigation of the foundation ground of the designed palace, addressing for this purpose to the Geotechnical Laboratory of the Technical University of Vienna, founded in 1929 by Karl Terzaghi, founder of modern soil mechanics. Under the leadership of eng. Kienzl, a disciple of Terzaghi, was executed from October 1936 to January 1937 a number of 9 boreholes, of which no. 1...4 to 45-51.5 m deep, no. 5 of 100 m and no. 6...9 of 47-60 m deep.

During the execution of the surveys, intact samples were taken from various crossed layers. In fact, however, they could extract samples that are truly intact only from the layers having sufficient cohesion. Thus, 91 cylindrical samples were obtained with diameters 25 and 15 cm and with a height of 37 cm. The deepest sample came from borehole No.5 from the depth of 88.2 m. The samples taken out were immediately paraffined and closed in tin boxes of zinc, which were sent to the geotechnical laboratory in Vienna".

Just before contacting the Vienna laboratory, the C.F.R. Administration ordered tests to be carried out with small size plates (200, 400 and 1000 cm²), placed at the depth of the lower face of the raft of the future palace. The pressure intervals were 0.5 kg/cm² and were kept for 1-2 hours. Here is how the authors appreciate the results of these plate tests and how they justify the need for laboratory determinations: "It is understood that these results obtained at the ground surface could not be valid for the pressure of the building exerted to great depths; then the time for determining by testing the settlement was far too short (of a few hours) compared to the interval in which the settlement usually takes place under the load of the building. That is why the results of the tests made in the laboratory on the intact samples taken from the depth, regarding the compressibility, studying the settlement until the cessation, looking to prevent the lateral failure of the



material, was expected with the right word. Thus, it was possible to compare the results of the compressibility test on site with those obtained in the laboratory on the intact samples".

The results of the tests undertaken in the laboratory of the Technical University of Vienna were included in the memoir entitled *Gutachten über die Fundierungsverhältnisse des Verwaltungsgebäudes der Rumänischen Staatseisenbahnen* (Expert report on the foundation conditions of the building of the Administration of the Romanian Railways). There are data on the following geotechnical characteristics: natural water content, plasticity limits, grain size, specific weight, compressibility (based on tests in the oedometer), permeability, shear resistance.

Communication of eng. Atanasescu and dr. Cantuniari includes an extensive section on probable settlement determination, absolute and relative, of the four buildings of the C.F.R. Palace building, which led to the following values. Here's what the authors of the communication write in the paragraph entitled Settlement Observation:

"The settlements calculated being of a theoretical nature, they must be kept in observation, in order to verify the hypotheses of the calculation. These observations have begun and are made according to a method indicated by Prof. Terzaghi. Thus, measurements were made after the building was erected to different heights and after longer interruptions of the work, for example after winter. The readings shall be recorded. They will continue after the building is finished."

All we have to do is invite our fellow geotechnicians who work in the C.F.R. Palace to inform themselves where they need to and to prepare for a future issue of the Geotechnics Magazine and Foundations the evolution of the subsidence of this monumental building, from its origins to the present.

The Conclusions chapter of communication, an example of technical accuracy and brevity, deserves to be reproduced in full:

"The unusual size of the Administrative Palace of the C.F.R. projected, imposed the geotechnical study of the foundation ground. The exploration works proved that in the complex of layers that make up the foundation ground, there are lenticular intercalations of compressible rocks and water-bearing layers. It was therefore possible to apply either the system of deep foundations, on piles, or of shallow ones, on the raft. Geotechnical studies, however, have shown that the compressibility modulus (M) has the value of 100 kgr/cm² near the surface, and at 40 and 60 m deep it has the value of 250 kgr/cm². If the pile system had been used, they had to be deepened to the layer of sand. The settlements of the ground under construction could in this case be lower; but the application of this system would have imposed higher costs. That's why the shallow raft was chosen as a foundation system and the resistance of the ground was not exceeded over 2.5 kgr/cm². The calculation of the settlements and the design of the foundations was made according to the modern norms used abroad. In order to verify the calculation hypotheses, measures were taken for the continuous observation of the settlements in the field and of some possible deformations of construction".

THE STORY OF THE "BORROWED" FOUNDATION OF THE TALLEST BLOCK OF FLATS IN BUCHAREST - Prof. Iacint Manoliu

This text has been published in the Magazine of Geotechnics and Foundations no.2/2004 – here is the original issue in Romanian language: [RRGF 2004-2.pdf](#).

When I decided that in the opening of the 2nd International Conference of Young Geotechnical Engineers (which was to be held in Constanta - Mamaia, in the organization of S.R.G.F. and under the auspices of ISSMGE, on September 7-10, 2003) to present a conference entitled "*Introduction regarding Romania and Romanian Geotechnics*", I was faced with the difficulty of choosing examples as representative as possible to illustrate the



evolution of geotechnics and foundations on the territory our country. Such an example was the conditions and solutions for foundation at the C.F.R. Palace in the capital, established through a good cooperation between the Romanian designers and the geotechnical laboratory of the Technical University of Vienna, founded by Karl Terzaghi, the father of modern geotechnics (see the presentation from the heading "Files from the history of Romanian geotechnics" inserted in no. 1/ 2004 of the Romanian Magazine of Geotechnics and Foundations).

Another example used in the 2003 conference was represented by an ensemble of housing constructions, also located in Bucharest, founded on the same type of alluvial formations as the C.F.R. Palace, also involving an international cooperation but ... with a special history.

What an archive folder can reveal



Summer of 1959. I had been working for several months at the Department of Geotechnics and Foundations on the post, still existing in the chair, as head of laboratory, which put me in the situation, as favourable as possible when you take the first steps in the profession, to collaborate with all the older staff in the department. One evening, before we separated, Mr. Stănculescu, then associate professor, handed me a voluminous file, with thick barks, telling me: "Professor Beleş obtained only until tomorrow, from the State Archives, this file regarding the construction of the Senate Palace. As the detailed plans of the foundations have not been found, ask you to look closely through the file to see if there is anything about the foundations.

I knew that Mr. Beles and Mr. Stănculescu were consulted by a design institute in connection with the foundation of a tower block, the highest in Bucharest, which was to be erected in Splaiului Square, as it was then called the current United Nations Square, on the site where, around the First World War, the construction of a new Palace of the Romanian Senate had begun, but that would be abandoned. I was also glad and excited that I was thus becoming involved in such an important work.

The emotion would be even greater in the white night that followed, spent going through tab by tab through the archive file entitled The Senate Palace and from which one could reconstruct, at least in part, a story that happened 47 years ago and which I will try to replay in the following, in a few sequences.

In 1912, the Romanian government decides to proceed to the construction of a Palace of the Senate, in order to give the Upper House of the Country's Parliament a place at least as imposing as that of the Chamber of Deputies, erected decades ago on the hill of the Metropolia. Here is, in the file, the minutes of the government meeting in which the decision to build is taken. It's written in ink on thick, yellow, drawing paper, by a calligrapher artist. I turn the page and - wonderful surprise - I discover the original exploits of the cabinet members, headed by Prime Minister Titu Maiorescu. It's been 45 years since that night, but I still remember the turmoil that engulfed me seeing the names and signatures of so many important men of the country.

For the realization of the foundation of the future palace, initially designed in the form of a general raft - plain concrete slab of 1.5 m thick, a tender is opened, awarded by



the company of the French engineers Grand and Rolin. I find in the file a letter of protest by local entrepreneurs asking the government to support the Romanian builders. The resolution put by the Minister of Public Works is lapidary: being a public investment, the tender was mandatory, and the winning company had the most advantageous offer (year: 1912).

However, the winning company proposes to replace the foundation on natural ground by foundation on the previously improved ground by "Compresol" displacement piles and of the thick slab raft through reinforced concrete soles joined by a general reinforced slab.

The Superior Technical Council of the Ministry of Public Works, probably influenced by the fact that the solution of foundation on general raft made of plain concrete had previously been successfully applied to the ministry building itself (currently the Capital City Hall), does not give its favourable opinion on the change of solution.

However, the Minister of Public Works prefers to follow up on the arguments of the construction company regarding the opportunity of some piles in field conditions such as those in the Dâmbovița meadow and orders the start of the works. The general contractor entrusts the 520 piles to a Belgian company. They bring in country machinery and staff and get to work.

In the file there are no sketches or plans, showing the piles layout, but only attachments, payment statements, consumption notes regarding the quantities of stone and concrete used.

Compresol piles, from Paris to Bucharest

In the book "Foundations and Foundation Procedures", published in 1983, I described the Compresol piles for sentimental rather than technical reasons (explainable, if one takes into account the above), including them in the category of "piles built on site by driving without tubing". The process consists of lifting a conical weight with a mass of 1.5-2 tons, and a maximum transverse size of 70 cm, at a height of 15-18 m, from where it is allowed to fall freely, several times, on the same place. This creates a hole which, after reaching the prescribed depth, is filled with ballast, crushed stone or concrete, which is compacted by means of a more ogival shape.

The first known uses of the process were represented by several works made in Paris, in view of the Universal Exhibition in 1900.

What had been built on that place between 1912 and 1925

The problems posed by the foundation of new constructions on the site where in 1912 the construction of the Senate Palace began are in detail presented in an article published in "Revista Construcțiilor și Materiale de Construcțiilor" nr. 5/1962, entitled "Geotechnical studies and research for the design and realization of the foundations of the blocks of flats in the Splaiului Square", by prof. ing. A. Beleş, assoc. prof. I. Stănculescu and eng. A. Lupaș. In the same issue of the journal are published two other articles, dedicated to the design and execution of the housing complex.

From the old construction, only architectural plans remained, from which it resulted that the Palace of the Senate was to include a general basement, a ground floor, two levels and an attic, on the sides and on the bottom side, dominated by a high dome, to cover the meeting room, in the central part. By the outbreak of the First World War, the Compresol piles and the reinforced concrete and slab raft had been executed.

After the war, in 1925, the basement, the ground floor and the floor over the ground floor were executed, the works being again interrupted due to lack of funds. The building

was left out until 1937, when it was resorted to covering with a temporary construction, including masking works and partial arrangement works for various uses: garages, workshops, warehouses, a cinema hall, commercial spaces, etc. I remember that, as a student, I participated through the years 47-48 in a school table tennis competition hosted in the provisional building. One winter, it was also from there that I bought the Christmas tree.

What was meant to be built in 1959

The new housing complex was to include:

- a central block (A) of 60 m height, comprising: basement, ground floor, 17 levels, a lookout at level XVIII and the rooms of the elevator machines at level XIX.
- two side blocks (B1 and B2) and one block on the back side (C), comprising: basement, ground floor and five levels.

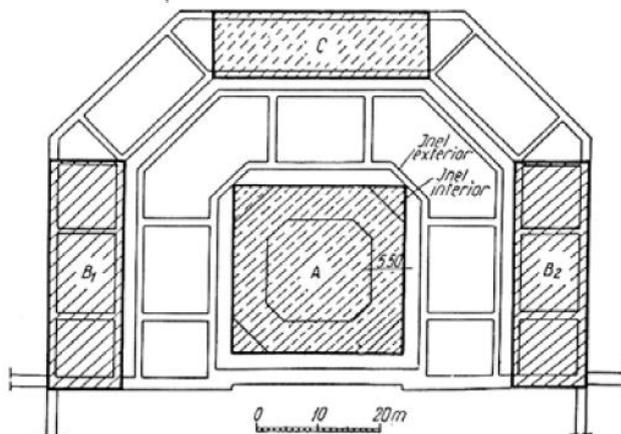


Fig. 1 shows the outline of the new constructions (the hatched parts), superimposed on the raft with reinforced concrete soles and the slab of the old building.

The erection of the new constructions required, in any case, demolitions related to the old construction. But it was one thing to demolish the mask-building made in 1937 or parts of the old building (the ground floor) that were no longer needed in the new buildings, and another was to make

the old foundation disappear. The hardships and costs associated with such an option appeared to be so great that avoiding it became imperative. In order to be able to adopt a decision, however, it was necessary to elaborate and carry out a program of investigations described in the mentioned article, regarding the raft, piles and soil.

A surprising discovery after 47 years

It could be established that the old foundations are made up of a general reinforced slab of 14-20 cm thick, with inversed beams made on reinforced concrete 60 cm thick. Under these beams, by stripping made on the side from the Palace of Justice of the raft was highlighted the presence of the displacement piles with diameters between 0.80 and 1.00 m and the inter-axis distance of 2.5-3.0 m.

Lacking the piles layout plan, it was admitted that the piles would have been disposed at the distance found on the contour and under the soles inside. This hypothesis led me, however, to a surprising finding, namely that the piles found on the ground in 1959 were fewer than those recorded in the statements of works in the archive file that I had consulted. The difference was on the order of 20%. I communicated this observation to Mr. Stănculescu who was amused by the finding but did not refer to it in the 1962 article, considering that there was probably no certainty regarding the number of piles on the field.

Anyway, in the 2003 conference, at which, in addition to the young geotechnicians from 38 countries, there were also high notables of the International Society of Soil Mechanics and Geotechnical Engineering, I allowed myself to introduce a slight humorous note saying that when the teacher of the work and the performer of the pilots agreed to settle a little more piles than those actually executed, dividing themselves, perhaps,



fraternally the resulting benefit, it did not even cross their mind that the "little understanding" would once come to light. For me, I said, it persists from the moment I noticed the discrepancy, the dilemma: would have been an adaptation of the Belgian sub-entrepreneur to the Balkan practices or, on the contrary, the mores from the West were exported to the banks of the Dâmbovița?

Regardless of the uncertainty regarding the number of piles, it was necessary to check both their behaviour under load and the condition of the soil between them.

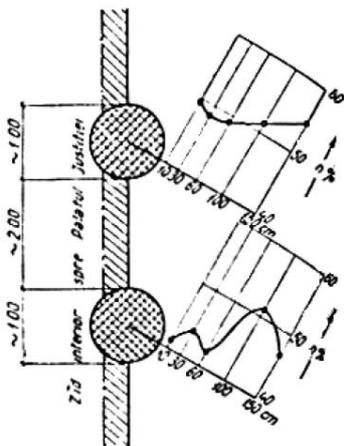
The test on a pile, using the raft to retrieve the reaction from the hydraulic press, led to a very good result: under a load of 125 tons the settlement was 1 cm.

The piles did their duty, compacting the ground between them

It was up to me to check on Mr. Stănculescu's behalf, the state of the ground between the piles. For this purpose, we descended into the open trench on the side of the Palace of Justice and armed with the Litvinov field kit, we collected soil samples at distances of 10, 30, 60, 100 and 150 cm from the face of each pile, at different depths. The kit that bears the name of a well-known professor from Kiev, who patented it, is what today would be called a "diplomat bag" (in fact two), in which it is found, miniaturized, the geotechnical laboratory, not only for the identification tests but also for the mechanical ones. The department had just equipped itself with this equipment and Mr. Stănculescu was eager to see him used. It must also be added, in order to understand what will be said next, that all the parts in the kit are made of stainless steel, shining accordingly. I was at the bottom of the trench, about 3.5 m deep, when I noticed that, from the front of the field, someone was watching carefully, as if slightly annoyed, the operations I was doing. I still saw my work.

The next day, Mr. Stănculescu told me that he met with the chief designer of the structure, the engineer Ara Aznavorian, who would have said something like this: "After what I saw yesterday, I radically changed my opinion about geotechnics. It seemed to me that it was a dirty job to deal with the earths, and when there, I found that your man was a man. work in white robe and with surgical instruments"...

(You may wonder, of course, why the name of the chief designer of the structure did not appear among the authors of the 1962 article. The answer is simple for the practices of those times. Meanwhile Mr. Ara Aznavorian had emigrated to France, and although emigration had been done in full legality, his name could no longer appear in the magazine. It was the task of the much younger collaborator, Adrian Lupaș, to represent the engineering of the structures in the articles on the remarkable constructions in the Splaiului square. In fact, Adrian Lupaș would emigrate later.)



In fig.2 are reproduced the curves of variation of the soil's porosity with the distance from the limit of the displacement pile are given. As can be seen, the displacement effect is pronounced over a distance equal to about 1/2 of the diameter. At the end of the paragraph mentioning these determinations, the article refers by * to a footnote in which it is written: "The research was carried out under the direction of assistant eng. I. Manoliu from the Department of Geotechnics and Foundations of the Bucharest Institute of Constructions". (The name mentioned in a footnote ... what a great feat, some might say. And yet... When those who entrust you with a

mission, and who then recognize the results, are great professors and great builders, from



whom, on the faculty benches and later, you had so much to learn, a simple note of a few lines, which will never be passed in a resume., means enormously much.)

"Comparable experience" in action when estimating tower block settlements

An essential role in establishing the foundation solution for new constructions, primarily for the tower block with much higher loads, was played by the estimation of the settlement. It was ordered the execution of some drillings with depths between 15 and 25 m, which established that, from the lithological point of view, the stratification towards the surface is different on the northern half of the site, where the clays predominate, compared to the southern half, where the sands and the dusty formations predominate. Based on the results of the laboratory tests on undisturbed samples for the determination of the physico-mechanical characteristics, it was concluded that although the formations on which the 4 blocks were based are of different age and nature, they are sufficiently consolidated.

To establish the net pressure on the ground, under the eraser of the tower block, two hypotheses were made:

- the tower block resting only on the central portion of the raft, with dimensions in the plane 29x29 m, hypothesis for which the net pressure was 1.7 daN/cm²
- the tower block resting on the entire surface of the raft, with dimensions in the plane 35x35 m, hypothesis for which the net pressure was 1.1 kg/cm².

The deformation moduli used in the settlement calculations were $E = 150 \text{ daN/cm}^2$ for clays and $E = 250 \text{ daN/cm}^2$ for sands. The calculation methods used were the method recommended in STAS 3300-52 (the method of summing the settlements on elementary layers) and the Egorov method, obtaining settlements of 9 - 10 cm under a pressure of 1.1 daN/cm² and of 13 - 14 cm under a pressure of 1.7 daN/cm².

These relatively large settlements made, of course, think professor Beleş who remembered that he had followed decades ago, for two years, the settlements of the palace "Agricola Foncieră" located nearby, but on the other bank of Dâmbovița and where, for a pressure of about 0.9 daN/cm², the settlements had stabilized at about 2 cm. Stănculescu proposed the capitalization of the published data on the settlement of the central body of the C.F.R. Palace, founded in similar conditions, which was about 30 mm at a field pressure of 1.5 daN/cm². It was concluded, by this way, that the tower block could have practically uniform settlements, of the order of 20 ... 40 mm.

Exactly 45 years after this estimate, Eurocode 7 Part 1 "Geotechnical design", finally reached its final form in 2004, has officially established the term "comparable experience", which it defines as follows: "Information documented or clearly established by any other means, regarding the ground considered in the calculation, involving the same types of land and rocks, which is expected to have a similar geotechnical behaviour, and involving similar constructions. Information obtained locally is considered to be particularly relevant".

At the buildings in Splaiului Square, but also at many other works, professors Beleş and Stănculescu made full use of the method of "comparable experience".

Final decision: Old foundations will be used for new constructions

"Taking into account the results of the investigations made to establish the conditions of foundation on the site of the blocks of flats in the Senate square, it was adopted the decision to use the old foundations for the new constructions".

Further it is shown that the tower block, placed above the old annular foundations, designed to support the loads of the central hall and of the dome of the projected Senate

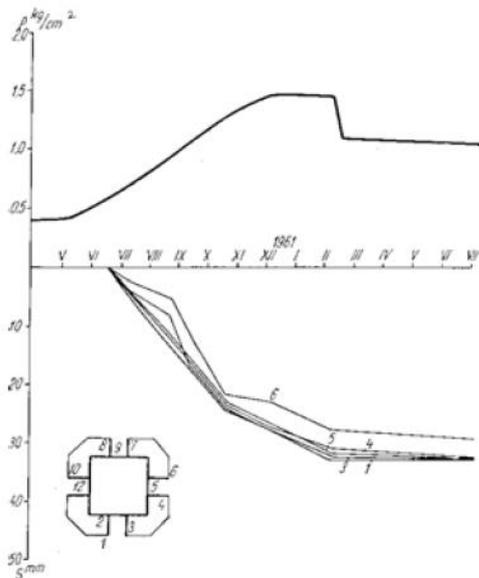


Palace, was founded on cassettes with rigid high walls, which would rest on the plate and beams of variable thickness and differently leaning on the ground of the old foundations.

The coffered foundation of the tower block, made above the old raft, was built in two stages.

In the first stage, the portions resting on the inner ring of the old foundation were made, then moving on to the erection of the structure, with the tracking of the subsidence. When the tendency to dampen the settlements was noticed, the second stage was passed, consisting of the connection of the foundation with the outer ring.

Fig.3 shows the time evolution of field pressures and settlement at the tower block. The moment of sudden reduction of pressure on the ground corresponds to the solidarization of the foundation with the outer ring, practically accompanied by the extinguishing of the settlement.



A brief recap

- shortly after patenting in France, a process of foundation or, rather, of improving the soft ground, was used in Romania for the foundation of a building of national importance;
- after 47 years since the execution of the piles and the raft with footings and plate, a complex program of investigations was undertaken, given the absence of the resistance project of the building started but abandoned;
- the essential problem of using the old foundation for a new building, with a different destination and structure from the one for which the foundation was intended, was brilliantly solved by professors Beleș and Stănculescu;
- the use of the old foundation for the new structure illustrates in an exemplary way the results to which the perfect cooperation between the specialists in geotechnical engineering and the specialists in the engineering of the structures can lead to.

Here are just a few reasons why the work that the subject of these lines has its place in the history of geotechnical engineering in Romania.

..... and an epilogue worthy of 1983

In the spring of 1983, when I was dean of the Faculty of Civil, Industrial and Agricultural Constructions, so, as it were, a public figure, I find myself being called on the phone by an editor from the Radio who invites me to participate in a show entitled "At your suggestion". I politely refuse him, showing him that I prefer "to sit in my bench" and not to appear on the public broadcaster. The man does not give up, he returns the second, the third day, with arguments such as: X also came, etc.

In the end, I let myself be convinced. As for the character of the show, I opt for a variant of the type "of all for all", this means that I could also introduce some specialized elements, of interest to the general public, with which I was going to propose different musical pieces, lyrics, etc. The show, lasting one hour, from 21 to 22, was not live (we are still in 1983) but was recorded two days before the wave.



In order to ensure the necessary spontaneity and smoothness, I agree with the editor that I will not come up with a written text, but only with an unfolder, on the basis of which to present what I had to say.

Said and done. Start recording. Everything goes smoothly up to a column like "Did you know that ... ", in which I say: "Did you know that the tallest apartment building in Bucharest has a borrow foundation? It rests on the foundation of the Senate building, begun in 1912 but later abandoned." Through the window that divides us I see the editor desperately beckoning me to stop.

"What's going on? I am asking. "Comrade teacher, do you want to get me in trouble? How can we say on the national radio station that the tallest block of flats in the capital of our socialist homeland sits on a foundation built during the bourgeois regime? "

I look closely at him, to see if he's kidding. At all, his fear is read on his face.

I try to show him that the very use of the old foundation for such an important construction is a great technical performance, a real reason for pride, but to no avail.

And so, the story of the loan foundation never went into the show.

THE SAD STORY OF PILE FOUNDATIONS IN ROMANIA IN THE "GOLDEN AGE"
– Prof. Iacint Manoliu

This text has been published in the Magazine of Geotechnics and Foundations no.2/2008 – here is the complete issue in Romanian language: [RRGF 2008-2.pdf](#).

It turns out that things went something like this:

A sunny Sunday morning in mid-September 1976. On the construction site opened for several months of the Calarasi metallurgical plant, the inevitable emotions preceding a visit of Nicolae Ceausescu. For the heads at the construction site, at the ministry, at the county party, things seem to be in absolute order, several hundred piles have already been driven for the foundations of a few major objectives, the prospects of overcoming the plan are good.

The helicopter that brings Nicolae and Elena Ceausescu is approaching the construction site. As they descend, from the cabin you can see better and better the forest of piles, lined up like soldiers preparing for the attack.

It's just that the attack would be directed at them, the poor piles stuck in the soft ground of the Calarasi, and on those who, in full knowledge of the facts and in good faith, designed them.

„Look, Nicu, how the wretched designers bury concrete!" must have said the holder of the cabinet 2.

The sight which, according to the reckonings of those below, should have filled the dreaded rulers with joy, had the opposite effect. As soon as he gets off the helicopter, Nicolae Ceausescu begins to thunder and lightning. "What's up with this waste? How did the designers allow themselves to put so many stakes in the ground? What has the ministry done?" and other such imprecations, carefully noted by those in the suite tasked with putting on paper the "precious indications".

As usual at such visits, among those who welcome the head of state and his consort, there is neither the project manager nor the designer of the foundations, in fact no specialist to show that the piles represent the most appropriate foundation solution, given the field conditions and the characteristics of the structures. Perhaps these things could have been said, however, by some of those on the spot, but the fear was too great, so they were content to shut up and nod approvingly.

The aftermath of the stormy "working visit" would appear the next day, in the form of a communique from the Presidential Chancellery, typed with the lame letters of all such



documents and addressed to the competent institutions. In essence, the communiqué said that, starting with September 16, 1976, the date of issue, the use of piles and columns for construction works in the Socialist Republic of Romania could be done only on the basis of a presidential decree.

The news fell like lightning into the ranks of specialist people. What do you mean by presidential decree for some piles? Is the technical body involved in the realization of the constructions founded on weak grounds, starting with the beneficiary, then moving on to the designer and ending with the builder, not being able to assess the opportunity of a foundation solution on piles? No, he is not in a position— he seemed to brutally say the chancellery communiqué, we do not trust you, in your ability to properly spend the money of the people.

Who, then, should have the solutions of foundation on piles, before they become the object of a presidential decree? I found out the answer in a few days, with the establishment of a "Commission for foundations on piles" attached to I.C.C.P.D.C. (Central Institute for Research, Design and Directive in Constructions). The committee included teachers, the heads of the geotechnical workshops from the major design institutes, researchers, but also two representatives of I.C.C.P.D.C who, significantly, had been entrusted with the roles of president and secretary.

And so, at the end of September 1976, the first meeting of the committee took place. Professor Ion Stănculescu, head of the Department of Geotechnics and Foundations at the Bucharest Construction Institute, was present, along with other specialists who had a say in Romanian geotechnics. The procedure is established from the very beginning: the representative of the beneficiary of the investment, preferably the designer himself, will briefly describe the geotechnical conditions on the site and the structure to be founded, after which he will bring the arguments in favour of the foundation solution on piles; any of the members of the committee can ask questions, ask for clarifications. The representatives of the beneficiary then withdraw to allow the committee to deliberate. The Commission is required to give its opinion on the desirability of piles, but if the opinion is favourable, it must not specify the number of piles. It will appear in the draft decision that will be prepared by another institution located as I.C.C.P.D.C. subordinated to the government, called, if I am not mistaken, the General Inspectorate for Constructions – Investments, which will prepare the decision to be approved by presidential decree.

The commission met twice a month at the headquarters of I.C.C.P.D.C. located in the INCERC premises on the road Pantelimon.

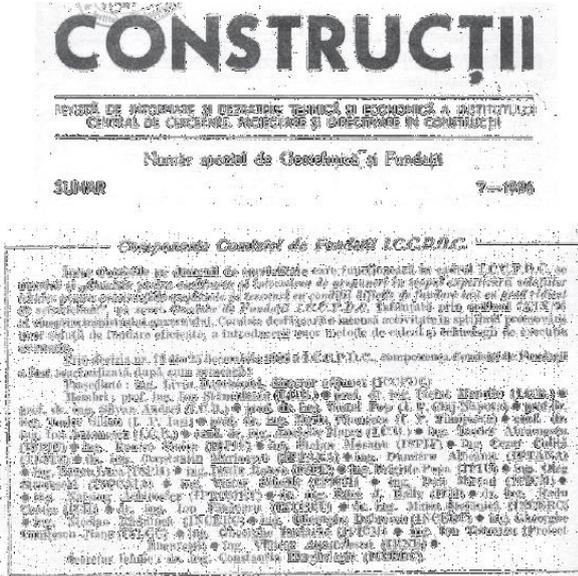
And what happened to the piles in Romania between September 1976 and December 1989?

For large works and in difficult field conditions, such as the large industrial plants, including the one in Calarasi, the constructions in the Danube ports, the bridges and others, the projects still provided for solutions for foundation on piles, which, obviously, the Commission approved.

For smaller-scale works, the minister on whom the investment depended on did not want to risk a smattering or even a dismissal from the big boss when he was to sign the decree, so that the watchword sent to the design institute was: "anything, but not piles!". They began to search for solutions for direct foundation on improved ground on different paths: ballast cushions, columns of granular material, columns of stabilized soil, etc. Experience has shown quite recently that these solutions did not always satisfy the safety requirements of the constructions and often the cost was higher than in the case of pile solutions. This led in a relatively short time to the extension of the area of competence allocated to the Commission, which was asked to give its opinion not only on solutions for



foundation on piles, but on foundation on difficult terrain in general. Consequently, the name of the Commission was also changed as it results from the decision I.C.C.P.D.C., inserted in the adjacent frame, which I found in the issue 7/1986 of the magazine "Construcții".



But, apart from the formulas such as: "piles in any case, otherwise it is not possible" and "anything but piles" there was also a solution that strengthens the reputation of the Romanian to cope, no matter how bad the circumstances.

What is it all about? A few years before the story with the "presidential decree" had begun to be used in the country, primarily for the works on the first line of the Bucharest metro, equipment for the execution of the diaphragm walls, for example equipment having a hydraulically operated bucket at the end of either a rod (Kelly) or a cable. Such equipment can make, by joining the panels, diaphragm walls, but they can also make deep foundation elements called barettes,

either as simple barette (from a single working position of the machine) or as compound barettes (from several working positions of the machine). Obviously, the barettes are entirely similar to the piles executed on the site by drilling under the protection of bentonite slurry, differing only in the shape of the cross-section.

The ban instituted in September 1976 talked about piles and columns but not about barettes. As a result, the years that followed experienced a proliferation in Romania of the solutions for foundation on barettes, favoured also by the existence of a design and execution norm that I had elaborated together with my colleague eng. Gh. Dobrescu from INCERC. Barettes were also used when appropriate (for works with high axial and transverse loads, and with a site lithology that allowed the barettes to work as end-bearing elements on the base, in order to use at full capacity the concrete in their body), but also when this was not the case, when a solution on precast floating piles could be much more economical, only that it needed a decree.

On 17-18 April 1997 I took part in Brussels at an International Conference organised by the European Technical Committee No. 3 for piles, with the theme of the design of piles axially loaded. The conference presented 17 national reports on practice in the field in the country concerned. In the report for Romania, I mentioned in the following terms the situation of the foundations on pilots in Romania before 1989:

"During the regime that collapsed in December 1989 and especially in the '60s and 70s', when the constructions in the heavy and petrochemical industries were skyrocketed, the pile foundations were very much to the liking of both the designers and the builders in Romania. The supreme authority in the country had become so concerned about a possible misuse of this foundation solution and the resulting waste of money and resources that in September 1976 it issued an order according to which for the use of foundations on piles, regardless of the type and number of piles, a decree signed by the president of the country became mandatory. In reality, the foundations of the piles were not abused. Many of the huge metallurgical and petrochemical plants as well as other plants were built along the Danube and the inland rivers; the ground conditions on those sites are characterized by the presence of alluvial deposits with high compressibility. Since the loessial soils sensitive to wetting cover about 17% of the country's territory,



many industries, for example the great steel plant from Galați, have risen on such grounds likely to lead to large and uneven settlements. The use of deep foundations was the only rational solution for industrial halls with high loads. The same applies to bridges and quays in Danube ports. Much lower was the use of piles in residential buildings, even in multi-storey buildings".

During the break that followed the presentation from which I quoted, I was literally assailed by colleagues in the West, whose message, almost in unison, was: "It is unthinkable! It's absurd! How can the head of state get involved in a purely technical issue?!" etc. Hard to clarify and convince them that in a totalitarian regime, such as the one in which the Romanians lived until December 1989, such things can happen, besides others much, much more serious.

However, there was also a "collateral effect" of the whole story with the presidential decree for piles, and this was precisely the establishment of the Foundation Commission or whatever it was called afterwards. For over 14 years, from September 1976 to December 1989, specialists in geotechnical engineering met twice a month and carefully examined, without any political or other interferences, but concerned only with the technical aspects, issues of the most diverse regarding the foundations on piles, at the beginning, and then to the broader scope of foundation problems in difficult conditions. When the life outside those walls was getting harder and uglier, the 4-5 hours of debates with complete freedom of spirit and respect for the opinion of the other, meant a kind of oasis, but also a real school.

Past achievements

On the occasion of the Xth Danube – European Conference held in Romania, a special dedicated volume on the Geotechnical engineering in Romania has been edited by Prof. Ion Stănculescu, Dr. René- Jacques Bally and Prof. Ion Antonescu.

Here an extract of the foreword of this volume:

"In Romania, as in other part of the world, complex problems related to geotechnical engineering occurred and were solved even before the appearance as an independent science. Among the many possible examples, we would only mention here the Danube bridge, put in service in 1895 and founded on compressed air caissons at a depth of 40 m below the lowest water level or the stabilization of the Black Sea cliff, 40 to 50 m high in the Constanta harbour area, in the first decade of this century (*NB 20th century*), with large drainage works and earth retaining structure.

The first laboratory and field studies in the spirit of the new discipline were performed in the thirties.

After the war, the country's extensive action for economical development implied many various geotechnical engineering problems, concerning every field of civil engineering technology. For solving these tasks, geotechnical teams, provided with field investigation equipment and suitable laboratories were formed in many central design institutions, assigned to various areas (urban and industrial buildings, transport, energy, land reclamation etc.) as well as in the county institutes. In 1948 an independent Soil Mechanics and Foundation Engineering educational discipline was introduced at the Civil Engineering Institute in Bucharest, followed by other academic institutions in the country.

Romanian political situation unhappily hindered, until December 1989, normal contacts between the country's geotechnical engineering community and foreign ones. For this reason, very few Romanian achievements in this field – some of them quite remarkable – came to be known abroad."



The volume Geotechnical Engineering in Romania can be read here: [Geotechnical Engineering in Romania, 1995.pdf](#).

Here below is the table of content showing in fact by the titles the main preoccupations of the Romanian geotechnical engineering until 1995.

- I. Stanculescu – *Outset of geotechnics in Romania*
- E. Marchidanu, I. Antonescu – *Some engineering geology features of the Romanian territory*
- I. Manoliu – *Geotechnical engineering education in Romania*
- I. Stanculescu, R.J. Bally, I. Antonescu, A. Chirica, O. Cosovliu, N. Raduinea – *Some civil engineering aspects concerning loessial collapsible soils in Romania*
- S. Andrei, S. Manea – *Research concerning unsaturated soils*
- I. Manoliu, A. Stefanescu – *Foundation problems of the Romanian offshore platforms in the Black Sea*
- E. Luca, P. Iancu – *Application of geotechnical studies to hydrotechnical constructions of local materials in Romania*
- I. Stanculescu, Th. Abramescu, R.J. Bally – *Straightening of building tilting due to the uneven settlement of foundation soil*
- I. Stanculescu – *Studies on landslide phenomena*
- N. Fratila – *The necessity and the contribution of the geological, geotechnical and rock mechanics studies in the mining industry field activity in Romania*
- I. Manoliu, N. Radulescu – *Use of the diaphragm walls technique for retaining structures, cut-off walls and for load-bearing elements*
- R.J. Bally, I. Borsaru – *Romanian equipment for interior surveying of soils and embankments*
- V. Haida, A. Gruia, M. Marin – *Use of vibration techniques in foundation works*
- R.J. Bally, R. Klein, G. Nicola – *Soil grouting in Romania*
- S. Andrei, V. Strunga, G. Dragomir – *Geosynthetics in Romania*
- C. Avadanei, I. Stanculescu - *The Danube – Black Sea shipping canal. Technical solutions adopted to provide stability of the canal's cross – section*
- D. Teodorescu, M. Tranca, I. Manoliu – *Foundations of the new Danubian bridges in Romania*
- R. Ciortan, C. Simescu – *Geotechnical and foundation problems in Romanian sea ports*
- I. Stanculescu, V. Dordea – *The underground building in Bucharest, correlated with the site's specific geotechnical and hydrogeological conditions*

The main contributions of this period are mainly related to:

- Study of loessial soils
- Study of swelling soils
- Systematisation and re-use of geotechnical data
- Unsaturated soils
- Education in geotechnical engineering
- Geosynthetics
- Hydraulic works – Danube – Black Sea canal, Black Sea ports
- Grouting techniques
- Consolidation of existing buildings and historical monuments



Most of these relevant Romanian contributions are well described in the above-mentioned special volume. These topics are approached by different authors coming from all the academic centres in Romania: Bucharest, Iasi, Cluj-Napoca and Timisoara.

For the systematisation and re-use of geotechnical data, Prof. Andrei Silvan had a very important contribution by developing the soil fingerprint and state diagram and their use. One of his scientific contributions in this direction is the paper "*La systématisation, le stockage et la réutilisation des informations géotechniques. Principes d'organisation d'une banque de données géotechniques*", having as authors Silvan Andrei, Sanda Manea and Andreea Ciocalteu, all from the Technical University of Civil Engineering Bucharest, published in *Revue Française de Géotechnique* in 1997. The paper can be found here: [RFG Andrei Silvan.pdf](#).

In the 1990's the Iasi geotechnical team from the Technical University "Gh. Asachi" published 2 significant theoretical contributions:

- Prof. Anghel Stanciu - *Une généralisation de la théorie de Coulomb pour le calcul de la poussée et de la butée des terres*, published in 1990 in *Revue Française de Géotechnique* no. 50 – can be consulted here: [Stanciu 1990 - Une generalisation de la theorie de Coulomb pour le calcul de la pussee et de la butee des terres 2.pdf](#).
- Prof. Anghel Stanciu - *Calcul de la pression critique initiale d'une fondation superficielle*, published in 1994 in *Revue Française de Géotechnique* no. 67 – can be read here : [Stanciu 1994 - Calcul de la pression critique initiale d'une fondation superficielle 2.pdf](#).

From the same Technical University "Gh. Asachi" Iasi in the 2010's has been published one more contribution in the field of loess by Prof. Nicolae Boti and his son Ioan Boti – *Research regarding founding constructions on loess and loessial soils, Șorogariilor Hill – Iași* – in fact presenting a research from 40 years before -, published at the XIIIth National Conference on Soil Mechanics and Foundation Engineering, Iasi, 2012, that can be read here: in English version [N. Boti - Research on loess.pdf](#) and here in Romanian [N. Boti - cercetari asupra loessurilor.pdf](#).

The geotechnical team from the Technical University of Cluj-Napoca was mainly involved in the consolidation of existing buildings. Here are 2 significant contributions of this team from the 2000's:

- Prof. Augustin Popa - *Underpinning of buildings by means of jet grouted piles*, published at the 13th Danube – European Conference on Soil Mechanics, Ljubljana, 2006 – can be read here: [A. Popa - Underpinning of buildings by means of jet grouted piles.pdf](#)
- V. Farcas, A. Popa, N. Ilies - *Variation of the parameters of injection for the ground in different regimes* published at the 17th International Conference on Soil Mechanics and Foundation Engineering, Alexandria, 2009. The paper can be read here: [Farcas, Popa, Ilies Variation of the parameters of injection.pdf](#)

A major contribution had Prof. Iacint Manoliu on the education in Civil Engineering in general and in Geotechnical Engineering especially. He had been deeply involved in the revision and modernisation of the curricula in civil engineering at the Technical University of Civil Engineering of Bucharest, where he was a professor, vice-dean, vice-rector and later Director of the international relations office. He published numerous studies and papers on the civil engineering curricula around the world, being involved in the whole Bologna process and in the accreditation in high education.



In the 1990's, just after the 1989 Revolution, he laid the bases for the international cooperation in civil and geotechnical engineering. He initiated and led many programs for international cooperation (TEMPUS, EUCEET, ..).

A paper written by Prof. Iacint Manoliu and Prof. Nicoleta Radulescu about the "International cooperation in Geotechnical Engineering Education - a case study involving Romanian and EU universities" can be read here: [Manoliu, Radulescu - International cooperation in the Geotechnical Engineering Education.pdf](#).

The role of EUCEET was described in the paper I. Manoliu – *Civil engineering in the context of the European higher education area – the role of EUCEET* – that can be seen here: [Manoliu - Civil engineering in the context of the european higher education area.pdf](#).

III. PRESENT ACTIVITIES IN THE ROMANIAN GEOTECHNICAL FIELD

In the more recent years SRGF's and the main stakeholders' activities were focused on:

Application of Eurocode 7 in Romania and technical norms:

- Activities in the mirror technical committee of ASRO (Romanian NSB)
- The presence of SRGF in this TC has been reinforced in 2016, when Prof. Loretta Batali, at that time Vice-president for Bucharest branch asked to 10 new members of Bucharest branch of SRGF to join the efforts:

Prof. Iacint Manoliu (UTCB) – already member previously

Prof. Loretta Batali (UTCB) – member in WG1 (EN 1997-1 and coordination) – TG2 (General rules) and WG3 (EN 1997-3) – TG6 (Reinforced soils)

Assit. Prof. Daniel Manoli (UTCB) – member in WG1 (EN 1997-1 and coordination) – TG4 (Dynamic design)

Assoc. Prof. Conf. Andrei Olteanu (UTCB) – member in WG2 (Ground investigation EN 1997-2)

Prof. Manole Șerbulea (UTCB) – member in WG 3 (EN 1997-3) – TG1 (Slopes)

Eng. Tudor Saidel (Saidel Eng.) – member in WG 3 (EN 1997-3) – TG2 (Spread foundations)

Prof. Nicoleta Rădulescu (UTCB) - member in WG 3 (EN 1997-3) – TG3 (Pile foundations)

Prof. Horatiu Popa (UTCB) - member in WG 3 (EN 1997-3) – TG4 (Retaining structures)

Eng. Alexandra Ene (Popp & Asoc. Inginerie Geotehnică) - member in WG 3 (EN 1997-3) – TG5 (Ground anchors)

Dr. eng. George Tsitsas (GT Eng.) - member in WG 3 (EN 1997-3) – TG6 (Ground improvement)

Eng. Dănuț Ungureanu – member in WG2 (Ground investigation EN 1997-2) (already member)

- From 2015 to 2018 Prof. Loretta Batali was appointed member of Project Team PT1 in charge of reviewing EN 1997-1. Between 2018 and 2020 Prof. Loretta Batali led the WG1/TG1&2 working group.
- The representation of Romania through the SRGF members was extended in 2020 by proposing new members in the new TG A – D working groups set up within TC 250/SC7, respectively in the Romanian CT 343 – Design bases and



Eurocodes for constructions. Members of the other branches of SRGF were also co-opted (see table below). Starting with 2020, Prof. Loretta Batali was appointed coordinator of the TG B group – Testing the present draft by examples and leader of the TG B2 subgroup - Design examples analysis.

TASKGROUP	MEMBERTYPE	COUNTRY	NAME
TG_A2	MEMBER	ROMANIA - ASRO	Loretta Batali
TG_A2 Total			
TG_B	COORDINATOR	ROMANIA - ASRO	Loretta Batali
TG_B Total			
TG_B1	MEMBER	ROMANIA - ASRO	Claudia Popa
			Ion Raileanu
			Olimpiu Muresan
TG_B1 Total			
TG_B2	MEMBER	ROMANIA - ASRO	Arpad Szerzo
			Iulia Prodan
	TG LEADER	ROMANIA - ASRO	Loretta Batali
TG_B2 Total			
TG_C1	MEMBER	ROMANIA - ASRO	Adrian Priceputu
TG_C1 Total			
TG_C2	MEMBER	ROMANIA - ASRO	Constantin Ungureanu
TG_C2 Total			
TG_C3	MEMBER	ROMANIA - ASRO	Alexandra Ene
TG_C3 Total			
TG_C4	MEMBER	ROMANIA - ASRO	George Tsisas
TG_C4 Total			
TG_D1	MEMBER	ROMANIA - ASRO	Horatio Popa
			Ioan Boti
			Iulia Prodan
TG_D1 Total			
TG_D2	MEMBER	ROMANIA - ASRO	Adrian Ciutina
			Arpad Szerzo
			Irina Lungu
TG_D2 Total			
TG_D3	MEMBER	ROMANIA - ASRO	George Tsitsas
			Loretta Batali
			Nicoleta Ilies

- In the meantime, some modifications occurred, Dr. Arpad Szerzo retired from SC7, but 2 other persons joined (eng. Silviu Tegzesiu and eng. Matei Bugnariu).
- As it can be seen, the Romanian presence is a consistent one, especially from a small country and a society with less than 300 members. Our efforts in terms of geotechnical community are focused on dissemination and information in order to have a future task force prepared to elaborate the National Annex to prEN 1997:202x and to revise accordingly the technical norms.
- SRGF also supports the national technical committee on Geotechnics with members.
- Activities at the Public Works Ministry
 - In 2010 a new series of technical norms aligned to Eurocode 7 has appeared, which will have to be revised once the new Eurocode 7 will be available. SRGF is present, along with the main universities in the technical committees of the Public Works Ministry.
 - SRGF attended recently the consultation of the Public Works Ministry on the revision of some technical documents and the revision of the whole system and presented the results of a survey among SRGF members, a proposal for



- revising the system, the results of an extended audit on the main technical documents.
- SRGF nominated members in the examination jury for authorized verifiers and experts
- Activities for disseminating the knowledge about Eurocode 7
- Since 2016 SRGF organises courses for its members for the application of Eurocode 7 in the daily practice, especially for those who are appointed by the Public Works Ministry.



- In 24.11.2017 SRGF organized a Symposium dedicated to Geotechnical design according to Eurocode 7. More than 100 people attended this event, that was organized by the technical committee of SRGF devoted to EC7. Most of the presentations were published in no. 2/2017 of the Romanian Magazine for Geotechnics and Foundations.
- In June 2021, at the XIVth edition of the Romanian Conference on Soil Mechanics and Foundation Engineering there was a special plenary session on Eurocodes, held in association with ASRO (Romanian NSB) and benefitting of the presence of Dr. Andrew Bond as keynote lecturer.



Dissemination of knowledge within and outside of SRGF

- Here below some of the recent events held in Romania and organised by SRGF for disseminating the knowledge and providing a scene for networking and cooperation:
 - 2.07.2018 – First National Symposium of Environmental Geotechnics and R.K. Rowe Lecture - Prof. Mario MANASSERO (Politecnico di Torino, Vicepresident for Europe of ISSMGE) „On the fabric, intrinsic and state parameters of active clays for contaminant control”.
 - 9.11.2018 – International seminar „New techniques and technologies for ground improvement”.





- 13.06.2019 – International workshop on rigid and semi-rigid inclusions technique
- 9-10.05.2017: Seminar Ongoing Aspects in Geotechnical Engineering organized at the TUCN together with the Austrian Society of Geotechnics and TU Graz
- 16.02.2021 Webinar „Evaluation of rock slope stability. related risks and seismic performance assessment of slopes in Romania”
- July – Sept. 2020 – Series of 5 free webinars given by sponsors of the National Conference CNGF 2020 (held online in 2021).
 - ✓ 6.07.2020 – Innovation and digitalization in Geotechnics – SBR Soletanche Bachy Fundații, SIXENSE Satellite
 - ✓ 14.07.2020 - New aspects of land improvement and reinforcement – Carmeuse Holding, BBG Germania/Naue Romania, GT Ground Eng. & Construction Services
 - ✓ 23.07.2020 - Current trends regarding the design and execution of deep excavations in urban areas - DI&A Design & Consulting, Saidel Engineering
 - ✓ 14.09.2020 - Special problems of geotechnical and geophysical investigations – Geosond SA, Geotesting SA
 - ✓ 22.09.2020 - Current aspects of monitoring geotechnical structures – Popp & Asoc. Ing. Geotehnica, Geokon USA, Geobrugg/Iridex
- 2 – 4.09.2020 - Series BIM in Geotechnical Engineering – 1 webinar and 2 courses organized together with ALLBIM NET
 - ✓ Webinar Workflow BIM in Geotechnical Engineering – 2.09.2020
 - ✓ Course Modelling retaining structures for deep excavations – 3.09.2020
 - ✓ Course FEM modelling and slope stability - 4.09.2020



- 2-3 June 2021 - CNGF2021 – XIVth National Conference of Soil Mechanics and Foundation Engineering – online

- 2 invited keynote lectures: Dr. Andrew Bond (UK, former Chairman CEN/TC250/SC7) - Bridging



the gap: bringing geotechnical and structural design together in the 2nd generation Eurocodes; Prof. Dietmar Adam (TU Vienna) - Retaining Structures in Challenging Ground Conditions - Case Studies from Europe

- Invited panelist: Dr. Sebastien Burlon (SETEC TERRASOL, France) - Seismic design : towards a displacement-based approach
- 2 plenary sessions, 4 discussion sessions, 2 workshops
- 45 technical presentations, 10 sponsors' presentations
- Technical exhibition: 21 virtual booths
- Proceeding: 93 papers, 700+ pages
- Virtual attendees: 275 (day 1); 216 (day 2)
- Virtual visitors technical exhibition: 189 (day 1), 132 (day 2)



Attendance to major international events

- In the recent years, efforts have been made in order to have members of SRGF attending the major scientific and technical events on Soil Mechanics and Foundation Engineering, among which:
 - 19th ICSMGE2017- 17 – 22 Sept. 2017 Seoul, Coreea
 - XVIth DECGE, Skopje, June 2018
 - 26th EYGEC – Graz, Sept. 2018
 - International Symposium on Energy Geotechnics SEG2018 – Lausanne, sept. 2018
 - 8th International Congress of Environmental Geotechnics, Hangzhou, Oct. 2018
 - XVIIth ECSMGE Reykjavik, Sept. 2019.
 - 27th EYGEC – Bodrum, Sept. 2019
 - 40 Years of roller integrated continuous compaction – Vienna, 29.11.2018



 Sep. 17 - 22, 2017
COEX, Seoul, Korea





Some of those international events were followed by a national event disseminating the knowledge to those who couldn't attend, as for example, recently, in 2019, following XVII ECSMGE Reykjavik.

Scientific contributions to major international events

Recently the Romanian scientific contributions to major international events increased in number, but also in quality and scientific level and in the number of oral presentations.

Here below there is a selection of those very recent contributions:

- Slope stability aspects for municipal waste landfills. Case studies and numerical modelling – L. Batali, A. Carastoian, G. Pantel, H. Popa, T. Ghibuș – L. Batali panellist in plenary session at XVII ECSMGE-2019 – can be seen here: [Batali - Slope stability aspects ECSMGE 2019.pdf](#)
- Assessment of physico – mechanical and durability characteristics of difficult soils improved by mixing with special lime-based hydraulic binders – L. Batali, G. Andries, H. Popa, published and presented in discussion session at XVII ECSMGE-2019 – can be read here: [Batali - durability soil lime mixing ECSMGE 2019.pdf](#)
- Soil-mix compacted cushion for rising ground level and distributing loads on a highly compressible foundation soil - E. D. Olinic, S. Manea, T. Olinic - published and presented in discussion session at XVII ECSMGE-2019 – can be read here: [Olinic ECSMGE 2019.pdf](#)
- Use of Compaction Grouting as Ground Improvement Technique in Compressible Solid Waste Landfill – presented by Dr. George Tsitsas in discussion session at XVII ECSMGE-2019
- Comparisons between design estimations and measurements on several design sections of a deep excavation in Bucharest – A. Ene, O. Carasca, I. Ionescu, D. Marcu, H. Popa – published and presented at XVII ECSMGE-2019 - can be read here: [Ene-ECSMGE 2019.pdf](#)
- Geotechnical behavior of underground house models – N.M. Ilies, I.M. Moldovan, S.V. Moldovan – presented as poster at XVII ECSMGE-2019 – can be seen here: [Ilies ECSMGE 2019.pdf](#)
- Analysis of various constitutive laws for numerical modelling of a diaphragm wall – H. Popa, L. Batali, S. Manea – published and presented at 19 ICSMGE – 2017 – presented here: [H Popa - ICSMGE 2017.pdf](#)
- Numerical modelling of piled raft foundations. Modelling particularities and comparison with field measurements – A. Szerzo, L. Batali - published and presented at 19 ICSMGE – 2017 – can be read here: [ICSMGE Szerzo, Batali 2017.pdf](#)
- Numerical modeling by finite elements for a pile foundation under lateral cyclic action – L. Batali, A. Dragusin, H. Popa – published and presented at XVI DECGE 2018 – can be read here: [DECGE 2018 Batali, Dragusin, Popa.pdf](#)
- On the elaboration of landslide hazard and risk maps in Romania – E. Olinic, S. Manea, I. Boti, C. Coman, C. Burlacu, G. Pantel - XVI DECGE 2018 – can be seen here: [2018 XVI-DECGE Paper Olinic.pdf](#)



- Development of the engineering barrier and closure system at the Romanian LILW Radioactive Waste National Repository, Baita-Bihor county – S. Manea, L. Batali, H. Popa, F. Dragolici, E. Neacsu – published and presented in plenary session by L. Batali at XVI ECSMGE 2015 – can be read here: [XVI-ECSMGE-Manea, Batali, Popa, Dragolici, Neacsu.pdf](#)
- Design, Execution and Monitoring of a Deep Excavation in Bucharest – A. Ene, O. Carașca, H. Popa – presented at TC 207 meeting, 2016 – can be read here: [Ene TC 207 2016.pdf](#)
- Laboratory Equipment for the Determination of Soils Compressibility Characteristics – A. Stanciu, A. Ilaş, A. Nicuta – presented at ISC 2020, Budapest - [Stanciu ISC2020-191.pdf](#)
- Improving Weak Soils Bearing Capacity by Using Gravel Cushion Reinforced with Geosynthetic Materials – F. Enache et al, Rev. Materiale Plastice 2016 - [Enache Rev Mat plastice 2016.pdf](#)

As it can be seen here above, at present the Romanian Society for Soil Mechanics and Foundation Engineering is consolidating its place in the international and national communities.

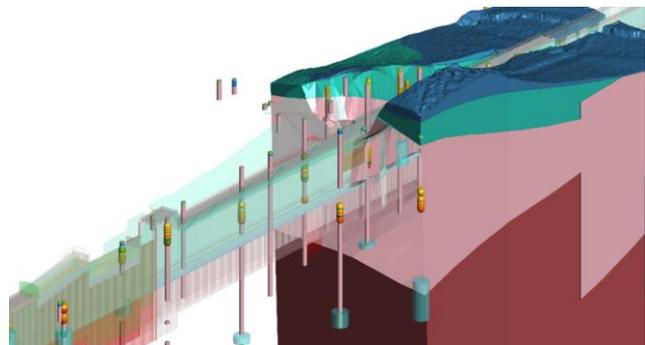
III. IDEAS ABOUT FUTURE OF GEOTECHNICS IN ROMANIA AND WORLWIDE

Here below a text written by a young geotechnical engineer, Phd student Alexandra Ene, at present the secretary of SRGF, her vision on the tomorrow's geotechnical engineering.

While some future technologies and means of working are easier to imagine even in more detail, especially since we have already seen the start of it, other might require a more ample imagination exercise and/or might remain at the stage of an "idea".

One of the obvious future states of practice is working in BIM environment, i.e. working on the same 6-7D model with the other specialties, including the ground model and the geotechnical works, from the site investigation, to the design and following the execution. Many steps have been already made forward so far, but it is expected to be a lot more developed. In the meantime, this might be a time to consider more seriously, how can geotechnical engineering be included in the same environment with the other specialties, while keeping the specifics we clearly have in contract to our collaborators (e.g. including the soil properties and the parameters for the design, results of calculations and results of site tests and measurements).

Is it possible that this technology, together with the increase of power of the computers that is needed to fully implement this, lead also to an "instant" update of the calculation model and an





improved prognosis of the behaviour based on the results of site measurements?

Application of the Bayesian method in fully mathematical terms is not easy today even for smaller problems and/or small data set, so an idea would be to use the computer power for this process to support the engineers' judgement and decisions.

Other ideas that have risen for the future, also inspired from the current advances in technologies, and which can be considered as early start in the present are represented by the possibilities of long distance inspection and monitoring means such as photo-video and thermal monitoring systems, but also satellite monitoring. The idea for the future is that these technologies would be able to provide sufficient accuracy to be implemented in daily practice, and only locally to be complemented by sensors measurements – of course, interrogated from the distance via Wi-Fi.



The regular site inspection and progress of the works is also expected to be done from the distance, if not from satellite images, but closer with the help of drones.



Also, following the same idea, it is worthwhile mentioning that it is expected for the future execution machine and equipment (such as drilling rigs, excavators etc.) to be electrical and fully self-operating, as there are already transportation trucks that are able to be independent from people.

Last but not least, we can also expect to start performing site investigations on other planets – once we can resolve the gravity issue there, of course.

