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A Member Association of the International Federation of Consulting Engineers

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KEEP IN TOUCH WITH THE ASSOCIATION OF CONSULTING ENGINEERS, SRI LANKA

President's Message



**Eng. A W Gamage
President (ACESL)**

During the past 02 years every industry has been touched by the COVID-19 pandemic, many in an overwhelmingly adversely way. Some are still struggling to recover in light of the substantial damage done during the pandemic all over the globe including our country.

The construction industry in Sri Lanka also faced several challenges due to the sporadic lockdowns, disruption in supply chains, shortage of material and increased costs due to consequent import restrictions.

Impact due to the pandemic for the consulting Engineering services is enormous. The government of Sri Lanka also terminated several ongoing major infrastructure projects, several projects in pipeline as well as ongoing consulting services provided by some of our member firms. As a result, several consulting engineers lost their livelihoods for varying periods.

There will be major challenges for all of us in this New Year 2022. The pandemic is forcing every sector to find and strive for innovative and quick adaptive solutions. COVID-19 forced the construction industry also to step outside of the box and think creatively. It is also about playing the important role we have in supporting our economy.

Suffice to say, the construction industry—along with all others—has been altered today, tomorrow, and beyond. While there are challenges and tribulations, there are also opportunities for growth, success, and positive impact. As Consulting Engineers, we have a major role to play in this process.

Due to pandemic, we were forced to use IT technology for meetings instead of meeting physically. This is a positive effect of the pandemic and today we can save our time & cost due to reduced travelling. Also, this helps all the professionals to attend any meeting irrespective of where they are residing. Activities of the ACESL were also limited during the past 22 months. However, the Council conducted regular meetings through online platforms.

Construction Industry Development Authority (CIDA) commenced the process of registration of the consultancy firms. ACESL also actively engaged and represented to protect the rights and privileges of our membership.

This is the high time to strengthen the ACESL for the betterment of Consulting engineering and for safeguarding our member firms and individual consulting engineers. To achieve this, we have to expand the member's involvement and representation for the ACESL activities. I trust that new council will take this challenge and will drive the association in the right direction.

From the Editor....

In my third council session as the Editor for the year 2020/2021, I am submitting the first newsletter with great pleasure. Further, I would like to extend my sincere thanks to the president, Eng. A W Gamage, for recommending me as the Editor for the Year 2021 too.

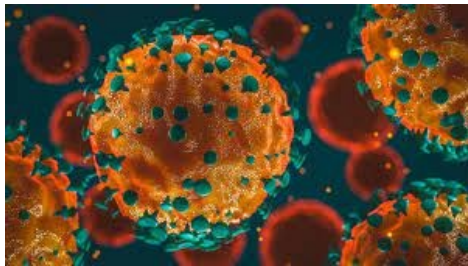
With assuming duties, I have been working, rendering services to the best of my ability to achieve the goals of the society. I am happy to state that, I have been motivated to implement new concepts and ideas with the assistance of other Council Members and I also would like to highlight some important views in the forthcoming news.

I would like to mention that we would be able to achieve the aims of the Association by working together as a team sharing ideas experiences and knowledge and also accomplish the general objectives of ACESL by determining resolutions for national and international issues that influence our profession.

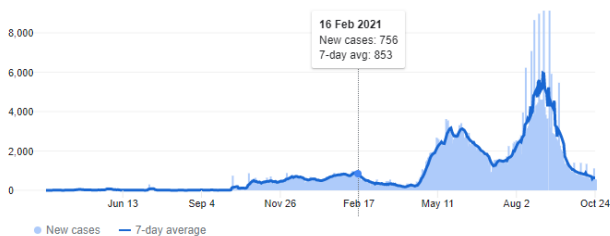
Your feedback to the newsletters of ACESL will be highly valued and appreciated. I consider this as an opportunity to invite you all to forward your contributions in different ways.

**Eng. P Dhammika Dharmaratne
Editor/ (ACESL)**

Effect - Covid 19



The World Health Organization has declared the novel coronavirus (SARS-Co-V-2) a global pandemic. The number of symptoms of COVID-19 increases daily around the world with the virus affecting hundreds of thousands. The donors can make fully regulatory contributions to support the work of hospitals, community-based organizations, and other charities that are mobilizing around the world to provide support to those affected by COVID-19.



This figure highlights the variations of corona virus cases within the past one and half years. The 13,611 numbers of death were indicated within that period. However recovered patients are around 503,388 up to date.

This pandemic situation has been effected for day to day activities in our country also. The government and private sector organizations has not been functioning as before. The low income community’s has faced a numerous difficulties due to this unexpected situation.

The Association of Conculting Engineers understood this situation and commenced the most suitable mechanism to perform the association regular works. All meetings were arranged through online platform. Conducting workshops, presentations, annual events, members get-togethers and other events were restricted and proceeded them through zoom technology. At the end, ACESL was able to carrying out all scheduled activites on time under given health guidelines.

Annual General Meeting (AGM)- 2021

The Annual General Meeting of the Association of Consulting Engineers, for the year 2021 is scheduled be held on 13th January 2022. The venue is Royal Ballroom, Grand Monarch, Thalawathugodaand at 6.00PM.

Special General Meeting (SGM) - 2021

The SGM was held at hotel Ramada, Sir Mohamed Macan Markar Mawatha, Colombo 3 on 30th December in 2020. During this session, it was decided to organize the AGM without waiting another year if the situation of pandemic was normal. At the end, the Council decided to have the AGM in May 2021. Later it was postpone due to Covid 19 3rd wave.

Corporate Plan-2020/2021

This event was organized at the Centre of Banking Studies in Rajagiriya. The preliminary discussions were held to prepare the corporate plan of ACESL, the way to registration of consultant companies and amending ACESL rules to meet CIDA standards.

Council Decisions

Following names were proposed and approved by the Council to represent for the following committees.

Committee Member	Committee
Eng. Anura Gamage (President)	FIDIC Board of Management - CIDA
Eng. (Ms.) Kamala Gunawardena	FIDIC/ASPAC
	Committee on Technical Auditing (CIDA) Chamber of Construction Industry (CCI)
Eng. (Ms.) Sumanaseeli Seneviratne	CIDA Credential Committee
Eng. M K C P K Manamperi	
Eng. Gehan Jayathilake	
Eng. J Karunaratne	National Construction Advisory Committee

Appointment of Auditor

M/s. Tudor V Perera & Co. (Audit firm) was appointed as the Auditors ACESL.

Young Professional Forum [YPF]

The 1st YPF committee meeting was held on 17th February 2020 Centre of Banking Studies at Rajagiriya. The meeting was represented by

- Eng. A W Gamage (President-ACESL)
- Eng. (Ms.) K Gunawardena (Immediate Past President)
- Eng. J Karunaratne (Hon. Secretary)
- Eng. K G Dayananda (YP Coordinator)

Following office bearers were appointed for YPF

- Vice Chairman (Eng. Deshan Gamage)
- Acting Secretary (Eng. Ms. A.R.V. Wijewardena)
- Treasurer (Eng. Sithija Weerasekara)

- Assistant Treasurer (Eng. Akila Warnasooriya)
- Event Organizer (Eng. A.Senevirathna)

The 2nd YPF committee meeting was held on 2nd March 2020 at Balapokuna Road, Kirulapane. The following office bearers were selected and appointed as

- President (Eng. Mr. Charitha Handagala)
- Secretary (Eng. Ms. Rajitha Gunathilaka)
- Editor (Eng. Ms. Dilini Gamage)

Following decisions were taken during the meeting.

- Establish sub-committee to promote memberships
- Generate the mechanism to increase the number of sponsorships
- Create a face book page to promote the events
- Arrange a separate newsletter for ACESL-YPF

Other matters

- Eng. Ms. Ridmi Galagerara was appointed as a professional secretary with effect from 23rd April 2021.
- Council approved the payment of Rs.56,000.00 amount for the updating and developing the ACESL web site during the year of 2021.
- Eng. Priyantha Gunathilake has submitted his resignation from the post of council member and council has given the acceptance.

Technical Paper

Inovative sustainable soil concrete flooring system

Prof. Rangika Halwatura and Dr. Harsha Galabada
Department of Civil Engineering,
University of Moratuwa.

Soil-concrete flooring system is a sustainable, novel earth-based flooring system which was inovated in University of Moratuwa as a result of series of experiment works. This innovation was recently come out as a effort of prof. R.U.Halwatura and his assistant. The concept of soil flooring is to develop a composite material out of soil as a flor base and finished with floor coating. This system is slightly similar to conventional terrazzo flooring; this is more sustainable than that. The more important factor is the soil required for the floor casting can be taken from the gravel pit closer to the site. The selected soil should be subjected to sieve analysis and can be developed to required soil compositions. Admixture, cement, and water to be added according to the correct mix design. The laying of soil concrete on the floor is a fully manual process. The ground that used to lay the floor has to thoroughly compacted and moist before laying. The 75 mm thick soil concrete floor base and a floor sealer, which is currently used in cut cement floors, as the top surface coating was recommended.



Figure 1: Soil use for flooring system

Most importantly the introduced construction methods become magical solutions to remove the machinery use in floor finishing material manufacturing process, hence, control the cost, and save the environment prolusion during the manufacturing and transportation floor finishes. In this concept, the initial target is to design an in-situ cast flooring system with soil. Mix proportion was concluded with all the results obtained from the series of the experiments as fine particle (\leq sieve size 0.425mm) content should be less than 10%, sand (sieve size $0.425\text{mm} \leq \text{sand} \leq 4.75 \text{ mm}$) content should be 55-60%, and gravel (sieve size $4.75\text{mm} \leq \text{gravel} \leq 25 \text{ mm}$) content should be 30-35%. The maximum gravel size is 25mm for the soil concrete floor base. The required cement percentage is 18%-20% depending on the usage of admixture. Further, it was concluded that the required moisture range was 16%-19% for soil concrete without admixtures to achieve a self-compacting workable mix. The water-cement ratio is a key parameter that governed the workability and the compressive strength of soil concrete Therefore, the performance of soil concrete with admixtures was studied to reduce cement usage and for further enhancement of the soil concrete strength. It showed that the soil concrete workability could be improved by adding chemical admixtures but on different levels for different admixtures. Therefore, it is recommended that the use of chemical admixtures is useful to enhance the workability and strength of soil concrete.

Every type of continuous "slab" flooring system, such as concrete floors, is prone to cracks. They are affected by displacement that occurs before or after drying as a result of settling, temperature changes, contraction during drying, or drying at different speeds. A few minor cracks in the floor are not inherently an indication of failure or a challenge, but rather an architectural feature that brings natural character and charm to it. Since curing is much important to ensure not only strength but also good wear resistance and prevent cracks, proper curing has to be done for 28 days. The suitable floor spans also should be provided to avoid the cracks. Glass or Aluminium or timber strips can be used but for more natural achitecheral appearance timber strips are highly recommended. Further, it is recommended to use separators at each 3 to 4ft span to avoid random cracks appear on the floor.



Figure 2: Few steps of floor casting

The top surface of the soil concrete floor should have a better architectural appearance and smooth enough for user comfort. Therefore, after 28 days from the casting the floor is to be smoothen by using a terrazzo cutting machine. Then the clay cement plaster to be applied in two layers. Then, the top wash coat which are available in the current market is applied same as cement rendering floor, terrazzo floor and parquet floor.

The comparison of thermal performance of soil concrete with other existing floorings shows lesser top surface temperature in a significant level compared with other floorings and also indoor air temperature. Therefore, since, this innovation mainly focused on the development flooring material for tropical climates, this gives more positive feature against user comfortability in tropical climatic region.

This novel in-situ cast technology having series of advantages to the construction industry such as minimum energy consumption and lesser waste generation. In this technology, any type of soil could be improved up to the proposed proportions and easily make it for construction. Due to the self-compacting quality of the mix, there's no need any compaction/ramming or vibration; mix will self-compact; just need to pour the mix into well prepared ground and floor is obtained the strength with mix properties and curing condition. Gravel particles will remain as it is in the mix that will help provide much architectural appearance to the finished floor. The novel technology will cater to the current demand for easy and quick construction technologies. This system is capable to cater for the different architectural requirement, maintaining its quality and user comfortability specially in tropical climatic condition like Sri Lanka.



Figure 3: Finished floor in mud house

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