

[REVISI HASIL PENILAIAN SEBELUMNYA]

DOKUMEN INI BERISI:

- 1. KATA PENGANTAR**
- 2. PAPER DARI 4 NEGARA**
- 3. PAPER SENDIRI**

1. HALAMAN AWAL DAN KATA PENGANTAR

Pembicara dari 4 negara: Indonesia, Japan, Singapore, Malaysia

LINK: <https://pubs.aip.org/aip/acp/article/2543/1/010001/2828968/Preface-The-4th-EPI-International-Conference-on>

The screenshot shows the preface page for the 4th EPI International Conference on Science and Engineering (EICSE) 2020. The page is titled "Preface: The 4th EPI International Conference on Science and Engineering (EICSE) 2020". It is part of Volume 2543, Issue 1, published on 16 November 2022. The preface text describes the conference, which was held virtually due to the COVID-19 pandemic. It mentions that the conference was organized by the Engineering Faculty at Hasanuddin University, Indonesia. The preface also lists the keynote speakers: Prof. Nizam (Indonesia), Prof. Yoshihiro Narita (Japan), Prof. Hirofumi Hinata (Japan), Prof. Robert de Souza (Singapore), and Dr. Muqtadha Ali Kham (Malaysia). The preface is signed by Dr. Faisal Mahmudun, Conference Chair, on behalf of the EICSE2020 Committee.

2. PAPER DARI PESERTA MINIMAL 4 NEGARA

JAPAN

LINK: <https://pubs.aip.org/aip/acp/article/2543/1/060018/2829271/FEM-analysis-for-in-plane-vibration-of-rectangular>

The screenshot shows the article page for "FEM analysis for in-plane vibration of rectangular plates with point supports" by Yoshihiro Narita. The article is published in Volume 2543, Issue 1, on 16 November 2022. The abstract states: "The free vibration of rectangular plates with point supports, the displacements. The formulation is made by considering the in-plane strain and kinetic energies, and a frequency equation is derived by the standard finite element procedure. In numerical examples, square and rectangular plates are supported at the four corner supports and at an additional central support. Accuracy of the solution is established by convergence tests and comparison with existing results for plates with uniform boundary conditions." The article is cited in the references section, specifically in N.S. Bardell and R.S. Langley, *J. Sound Vib.* 191, 459–467 (1996).

MALAYSIA

LINK: <https://pubs.aip.org/aip/acp/article/2543/1/080014/2829362/Computational-investigation-into-resistance>

The screenshot shows a web browser displaying the AIP Conference Proceedings website. The page features a dark blue header with the AIP Publishing logo and navigation menus. The main content area is white and contains the article title, authors (Ahmad Fitriadhy, Nur Amira Adam, Raja Noor Syaheeda, Faisal Mahmuddin, Suandar Baso, Mohd Azlan Musa, and Mohd Hairil Mohd), and a detailed abstract. The abstract discusses the use of Computational Fluid Dynamics (CFD) to predict the total resistance of a pusher-barge system. On the right side, there are sections for 'View Metrics', 'Citing Articles Via' (with a Google Scholar link), and a promotional banner for 'Applied Physics Letters' with guest editors. The browser's address bar shows the URL: <https://pubs.aip.org/aip/acp/article/2543/1/080014/2829362/Computational-investigation-into-resistance>. The page is identified as Volume 2543, Issue 1, dated 16 November 2022.

TOGO

LINK: <https://pubs.aip.org/aip/acp/article/2543/1/070002/2829379/New-approximate-analytical-solutions-for-time-step>

The screenshot shows a web browser displaying the AIP Conference Proceedings website. The page features a dark blue header with the AIP Publishing logo and navigation menus. The main content area is white and contains the article title, author (Kwassi Anani), and a detailed abstract. The abstract discusses analytical solutions for time-step models of vaporizing droplets. On the right side, there are sections for 'View Metrics', 'Citing Articles Via' (with a Google Scholar link), and a promotional banner for 'APL Energy' with the text 'First Articles Now Online!'. The browser's address bar shows the URL: <https://pubs.aip.org/aip/acp/article/2543/1/070002/2829379/New-approximate-analytical-solutions-for-time-step>. The page is identified as Volume 2543, Issue 1, dated 16 November 2022.

INDONESIA (PAPER SENDIRI)

LINK: <https://pubs.aip.org/aip/acp/article/2543/1/030013/2829258/FEM-analysis-of-hybrid-composite-beams-made-of>

The screenshot shows a web browser window with multiple tabs open. The active tab is the AIP Publishing website. The page header includes the AIP Publishing logo and navigation links for 'HOME', 'BROWSE', 'FOR AUTHORS', 'FOR ORGANIZERS', and 'ABOUT'. The main content area features the article title 'FEM analysis of hybrid composite beams made of normal concrete and foamed concrete' by Fakhruddin, Muhammad Wihardi Tjaronge, Muhammad Akbar Caronge, and Lsmunandar Muchtar. A dropdown menu for the author 'Fakhruddin' is open, showing his affiliation with Universitas Hasanuddin, Makassar, and his email address. The article abstract is partially visible, mentioning 'beams, a combination of two different layers of normal concrete...'. On the right side, there is a 'View Metrics' button and a 'Citing Articles Via' section with a 'Google Scholar' link. A promotional banner for 'APL Energy' is also present, stating 'No Article Processing Charges (APCs) through 2023'. The browser's address bar shows the URL, and the Windows taskbar at the bottom displays the system tray with the date and time as 10:14 AM on 5/15/2023.

FEM analysis of hybrid composite beams made of normal concrete and foamed concrete

Cite as: AIP Conference Proceedings 2543, 030013 (2022); <https://doi.org/10.1063/5.0094742>
Published Online: 16 November 2022

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FEM Analysis of Hybrid Composite Beams Made of Normal Concrete and Foamed Concrete

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Abstract. Flexural performances of hybrid composite beams, a combination of two different layers of normal concrete and foamed concrete, were investigated numerically using FEM Analysis. Three beams were tested with dimension 150 mm in width, 200 mm in height and 3300 mm in length. Two composite beams were made with different depths of foamed concrete, which were 50 mm (HB-50) and 100 mm (HB-100). The results of these beams were compared with the control beam (CB) with full layer of normal concrete. The flexural performance of beams was evaluated in terms of load-deflection response, load-strain of concrete and steel bar, crack pattern and failure mode. The results showed that foamed concrete at hybrid composite beams reduced the ultimate load of the beams. Compared to the control beam, the ultimate load of HB-50 and HB-100 was decreased by 29.5% and 30.8%, respectively. However, different depth of foamed concrete at the hybrid beams showed an insignificant effect on the ultimate load. The number of cracks on HB-50 and HB-100 was larger than that of CB. Some cracks in foam concrete do not propagate upward to the normal concrete layer. Finally, all the beams failed under the crushing of compression concrete.

INTRODUCTION

Today, the number at which concrete is used is much higher than 40 years ago [1]. The estimation of the present consumption of concrete in the world is 11 billion metric tonnes every year. Concrete has many advantages over other materials such as possesses excellent resistance to water, can be formed into a variety of shapes and sizes and the cheapest and most readily available material on the job [1]. The principal components for making concrete, namely aggregate, water, and portland cement are relatively inexpensive and are commonly available in most parts of the world.

Massive exploration of the natural materials for producing concretes affects the environmental condition and global warming that may cause disasters such as flooding and landslides. Therefore, it is necessary to reduce the effect of concrete materials on the environmental impact. The concrete should be used as efficiently as possible. Thus, the research on the fields of concrete efficiency should be conducted intensively.

The natural behavior of concrete material is strong in compression and weak in tension. The tensile strength of concrete is about 8 to 15 percent of the compression strength [2,3,4]. Therefore the contribution of the tensile strength of concrete to the flexural capacity of the beams is neglected as illustrated in Fig. 1. The flexural capacity of the beam is influenced only by the compression stress of the concrete and the tensile stress of the steel reinforcement [2], as expressed in Eqs. (1) and (2).

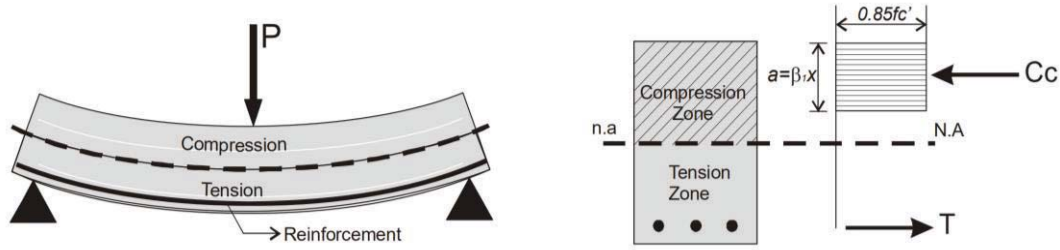


FIGURE 1. Compression and tension zone of RC beam due to flexure [4]

$$M_n = 0.85f'_c\beta_1b\left(d - \frac{1}{2}a\right) \quad (1)$$

$$M_n = A_s f_y \left(d - \frac{1}{2}a\right) \quad (2)$$

where f'_c is the concrete strength, b is width of the beam, d is the effective depth of the beam, a is depth of equivalent rectangular stress block, A_s is area of steel rebars, and f_y is yield stress of steel bars.

In order to efficiently use the concrete materials, then the compressive strength of the concrete on the tensile stressed section may be reduced, or the concrete on the tensile stressed section may be removed. However, this will affect to the durability of the concrete structure. Some methods have been studied to replace concrete on the tensile stressed section such as the use of hollow concrete [5,6,7], engineered cementitious composites [8] and styrofoam concrete [9].

This study developed foamed concrete to replace concrete on the tensile stressed section. Research about the mechanical properties of foamed concrete has been investigated by many researchers [10,11,12,13,14,15,16]. Foamed concrete or cellular concrete is either a mortar or cement pastes in which air voids are artificially entrapped in mortar. Foamed concrete has advantages such as low self-weight, high flowability, minimal usage of aggregate, controlled low strength, and excellent thermal insulation properties. Due to its lightweight and more economical nature, its applications as a lightweight material in the construction industry are gaining growing popularity. Foamed concrete has low compressive strength, therefore, its application on the hybrid structure may affect the behaviour of structures.

In this regard, this study investigates the effect of foamed concrete on the flexural behaviour of hybrid composite beams made of normal concrete and foamed concrete. This study was conducted numerically by using FEM Analysis software. The flexural performance of beams was evaluated in terms of load-deflection response, load-strain of concrete and steel bar, crack pattern and failure mode.

FOAMED CONCRETE

Foamed concrete is a mortar or cement pastes in which air voids are artificially entrapped in mortar. It possesses low self-weight, high flowability, minimal usage of aggregate, controlled low strength, and excellent thermal insulation properties. Foam concretes are given their structure for foaming by using foam generators or stirring up the cement paste using foaming agents and fast rotating pug mill mixers. The paste consists of the binder, usually cement, finely grounded quartzitic sand, water and foam generating admixtures. After molding the foam, the concrete hardens under normal atmospheric conditions [10].

The foamed concrete consisted of Portland cement, sand, foam agent and admixture as shown in Fig. 2. The mix design of foamed concrete was presented in Table 1. The type of foam agent was Texapon N70. It is a highly concentrated sodium lauryl ether sulphate derived from natural fatty alcohols. During the mechanical foaming procedure, a foam agent is added to the mortar. Numerous bubbles are mechanically introduced by high-speed mixers. A relatively unstable foam develops with an irregular structure and undefined void structures [17]. In practice, a more usual manufacturing method is physical foaming. A pre-manufactured foam consisting of water and the chemical admixture is mixed with the additional components. Under these conditions, a more stable and fine-pored mortar will result [17].



FIGURE 2. Materials in foamed concrete

TABLE 1. Mix design of foamed concrete (per m³)

Cement	Sand	Water	Sikament LN	Foam Agent
662.5 kg	1,325 kg	232 liter	16.6 kg	30% of mortar portion

FEM MODELLING

Geometry and Meshing

The geometric details of the numerical models were defined according to the specimen as shown in Fig. 3. A total of three beams were investigated by using FEM analysis. Detail of all beams is shown in Table 2. The dimension of beams was 150 mm in width, 200 mm in height and 3300 mm in length. Two composite beams were made with depth of foamed concrete was 50 mm and 100 mm. The results of these beams were compared with the control beam made of full layer of normal concrete.

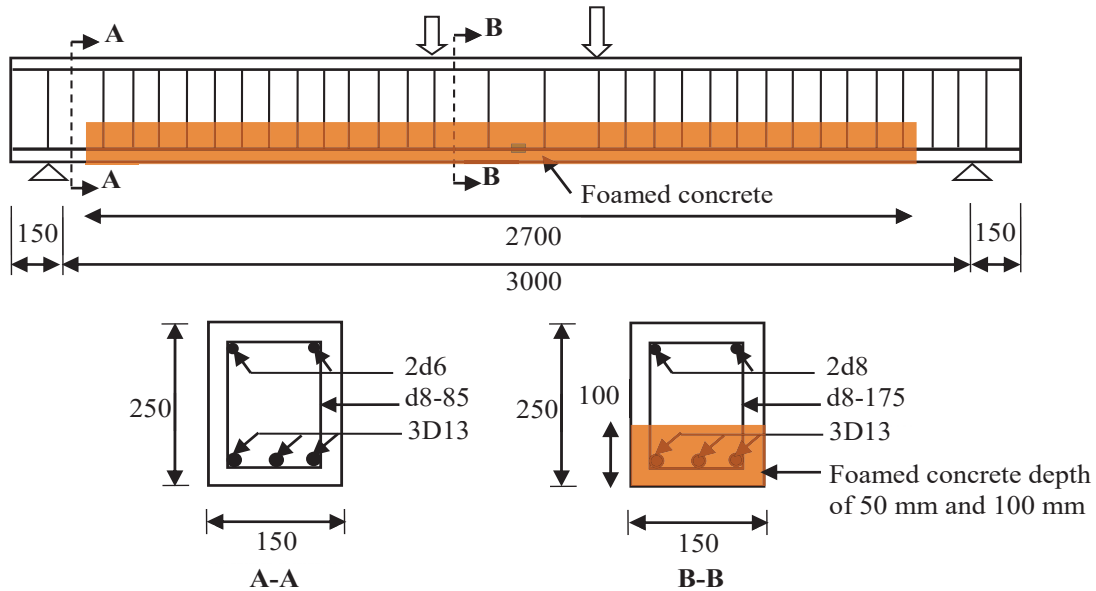


FIGURE 3. The geometric detail of specimens

TABLE 2. Variation of specimens

Beam code	Depth of foamed concrete (mm)	Remark
CB	-	Control beam
HB-50	50	Hybrid beam
HB-1100	100	Hybrid beam

A nonlinear plane stress analysis is to be carried out on a model of a reinforced concrete beam. The 2-dimensional model of control beam and hybrid beam is shown in Figs. 4 and 5, respectively. The reinforcement was provided in the lower and upper face of the beam has a total cross-section area of 397.9 mm^2 (3D13) and 100.5 mm^2 (2d8), respectively. The reinforcement was also provided at the vertical direction of the beam as the transverse rebars with the total cross-section of 100.5 mm^2 . The superposition of nodal degrees of freedom assumes that the concrete and reinforcement were perfectly bonded. It was assumed that the self-weight of the beam is negligible compared with the applied load.

The model of control beam consists of two parts: the concrete elements and the steel elements (reinforcement and dowels). The model of hybrid composite beam consists of four parts: the normal concrete element, the foam concrete element, the steel elements (reinforcement and dowels) and interface between normal concrete and foamed concrete. The concrete beam was modeled as surface while the reinforcement was defined as a line. The reinforcement was modeled by the bar element during analysis. The mesh division of a 50 mm square was adopted for the analysis

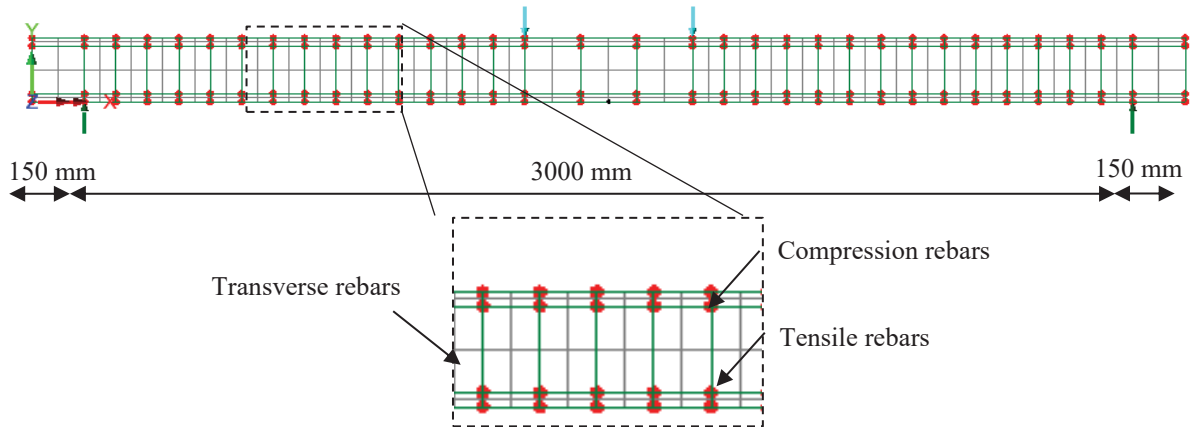


FIGURE 4. Numerical model of control beam (NC)

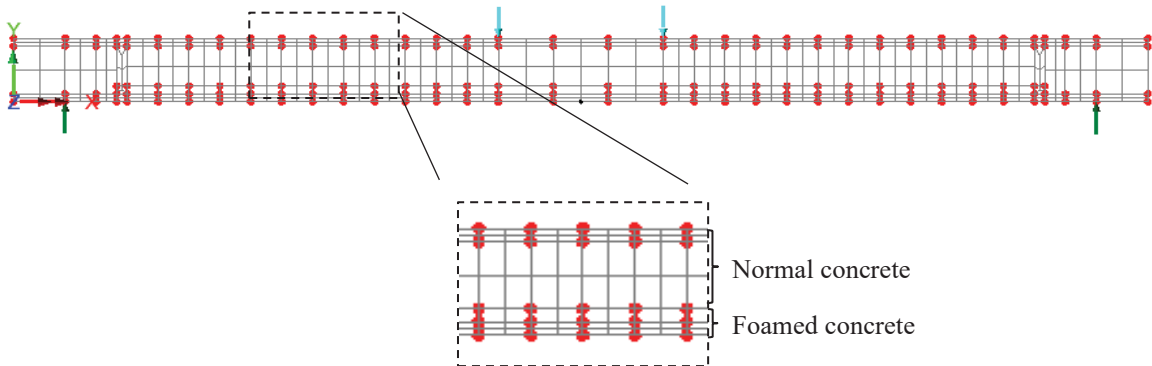


FIGURE 5. Numerical model of hybrid beam

Material Properties and Model

Concrete

To define the mechanical properties of normal concrete and foamed concrete, uniaxial compression tests were performed on cylinder specimens with dimension of $100 \times 200 \text{ mm}$. Compressive and tensile strength test were conducted by using Universal Testing Machine at the age of 28 days as shown in Fig. 6. The compressive and tensile strength tests followed ASTM C39 [18] and ASTM C78 [19] specifications, respectively. Properties of normal concrete and foamed concrete were presented in Table 3.

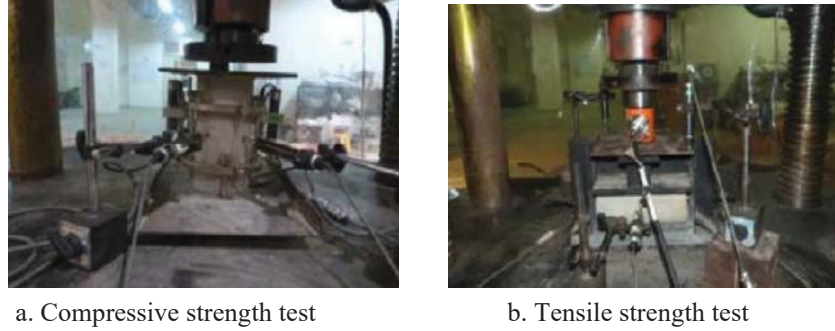


FIGURE 6. Compressive and tensile strength test

TABLE 3. Properties of normal concrete and foamed concrete

	Normal concrete	Foamed concrete
Compressive strength (MPa)	20.37	5.70
Tensile strength (MPa)	2.07	0.52
Modulus of Elasticity (MPa)	21209	3823

In FEM Analysis, the typical stress-strain of the concrete that was used is shown in Fig. 7. A multi-crack concrete (Model 94) was used. The multi-crack concrete model is a plastic-damage-contact model in which damage planes form according to a principal stress criterion and then develop as embedded rough contact planes. In this model, the input data was uniaxial compressive strength (f_c), uniaxial tensile strain (f_t), strain at peak uniaxial compression (ϵ_c), strain at effective end of softening curve for distributed fracture (ϵ_0), fracture energy per unit area (G_f).

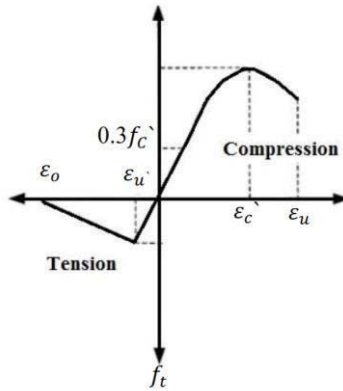


FIGURE 7. Stress-strain curve of concrete

Reinforcement

The properties of steel bars were determined by conducting a tensile strength test in the laboratory as shown in Fig. 8. The yielding stress (f_y), yielding strain (ϵ_y) and Young modulus (E) of steel bars were presented in Table 4.

TABLE 4. Properties of steel bars

Steel bars diameter (mm)	Yield stress (MPa)	Yield strain ($\mu\epsilon$)	Young Modulus (MPa)
8	377.87	1960	193038
13	388.32	2020	214543



FIGURE 8. Tensile strength of rebars

In FEM analysis, the steel bars are modeled by means of the embedded reinforcement element (perfect bonding). A bilinear elasto-plastic constitutive model is used to appropriately represent the stress-strain relationship of reinforcing bars as shown in Fig. 9.

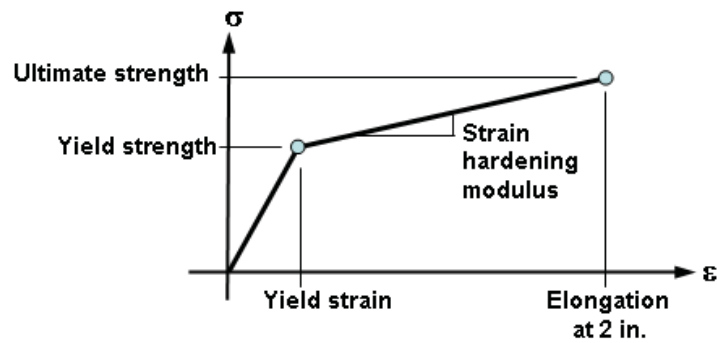


FIGURE 9. Stress-strain of steel bars

Boundary Condition and Loading Point

A simply supported boundary condition was assigned at the bottom of the beam at 150 mm from the edge. Two-point loads were applied to the top of the beams at a distance of 1450 mm from the edge. This was to simulate a four-point bending test as shown in Fig. 10. Plane stress (QPM8) elements represented the concrete section, and bar (BAR3) elements presented the reinforcement bars.

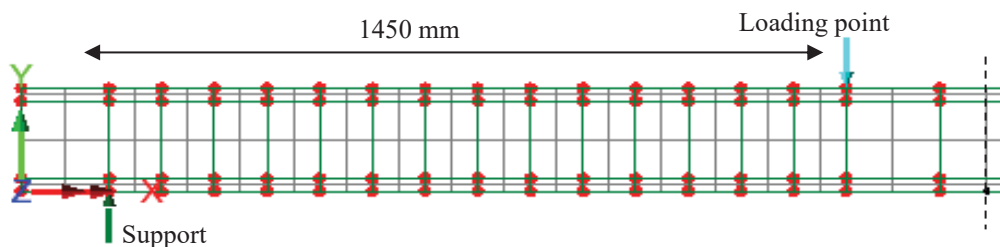


FIGURE 10. The boundary of beam at FEM analysis

RESULTS AND DISCUSSION

Load-Deflection Curves

Figure 11 shows the load and deflection responses of all beams and the results of FEM Analysis are summarized in Table 5. The deflection reported here was the deflection at the mid-span of the beam. Generally, all the beams exhibited similar behavior until the first crack. After that, the slope of load-deflection curves reduced gradually. The slope of CB was higher than that of HB-50 and HB-100. Meanwhile, the stiffness of HB-50 and HB-100 was almost similar. This indicates that the use of foamed concrete at the hybrid beams affected the stiffness of the beams. However, the different depth of foamed concrete at the hybrid beam did not significantly affect the stiffness.

After the yielding load, the slope of load and deflection curve reduced significantly. The load was constant, while the displacement still increased until the failure. This was a typical flexural failure mode.

As shown in Table 5, the first cracking load and deflection of CB were 5 kN and 0.53 mm, respectively. The first cracking load and deflection of HB-50 were 5 kN and 1.60 mm, respectively. The first cracking load and deflection of HB-100 were 4 kN and 1.55 mm, respectively. This indicated that the first cracking load almost similar in all beams but the deflection of hybrid beam was higher than that of normal beam.

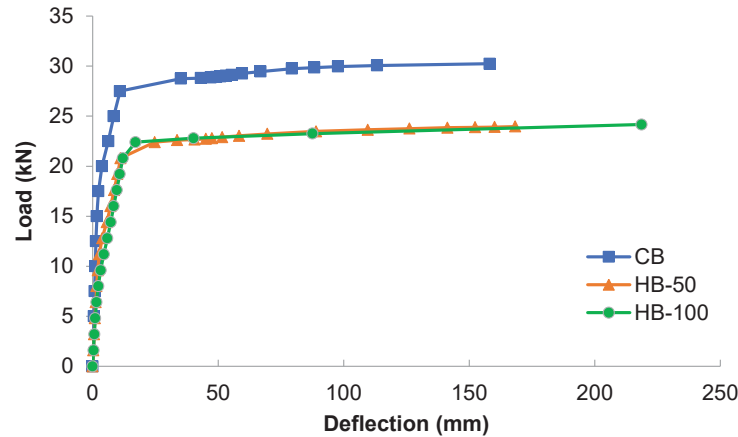


FIGURE 11. Load-deflection responses

TABLE 5. Results of FEM analysis

Beam	First crack		Yield		Ultimate		Failure mode
	P_{cr} (kN)	Δ_{cr} (mm)	P_y (kN)	Δ_y (mm)	P_u (kN)	Δ_u (mm)	
CB	5	0.53	27.5	10.91	30.2	158.19	Flexural failure
HB-50	5	1.60	18.2	11.16	21.3	180.44	Flexural failure
HB-100	4	1.55	18.2	12.01	20.9	218.64	Flexural failure

At yielding, the load and deflection of CB was 27.5 kN and 10.91 mm, respectively. HB-50 was 18.2 kN and 11.16 mm, respectively and HB-100 was 17.8 kN and 12.01 mm, respectively. Compared to CB, the yielding load of HB-50 and HB-100 was decreased by 33.8% and 35.3%, respectively. It means that the use of foamed concrete at hybrid composite beam reduced the yielding load of the beams. However, the different depth of foamed concrete at the hybrid beam showed an insignificant effect on the yielding load.

Finally, at the failure, the ultimate load and deflection of CB was 30.2 kN and 158.19 mm, respectively. HB-50 was 24.0 kN and 180.44 mm, respectively and HB-100 was 23.8 kN and 218.64 mm, respectively. Compared to CB, the ultimate load of HB-50 and HB-100 was decreased by 29.5% and 30.8%, respectively. This indicated that the use of foamed concrete at hybrid composite beams reduced the ultimate load of the beams. Similar to yielding load, the different depth of foamed concrete at the hybrid beams also showed an insignificant effect on the ultimate load.

Load-Strain Curves

Figures 12a and b show the load and strain curves of steel bars and concrete, respectively. The location of steel gauge was at the middle of the longitudinal rebars, while the location of the concrete gauge was at upper surface of the beam.

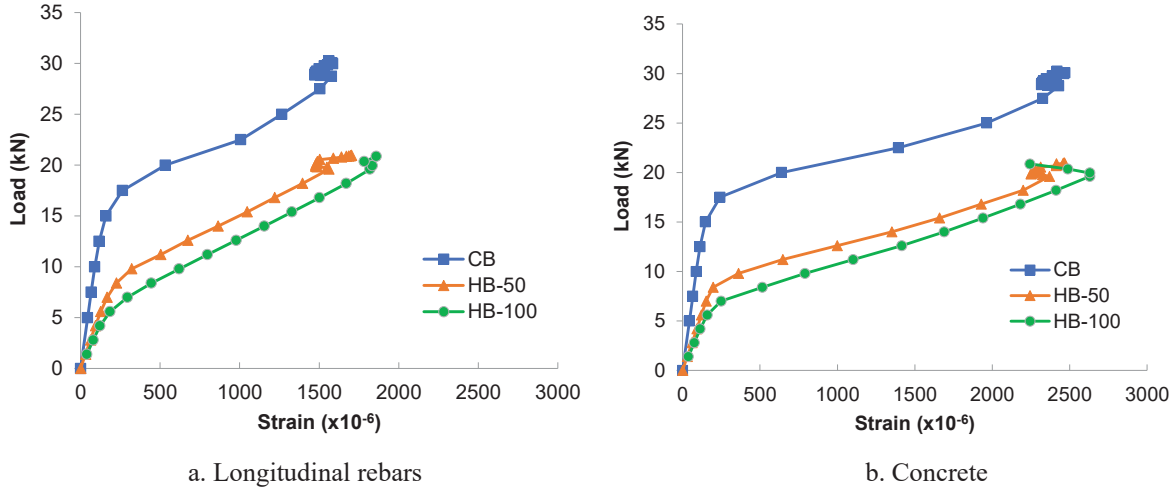
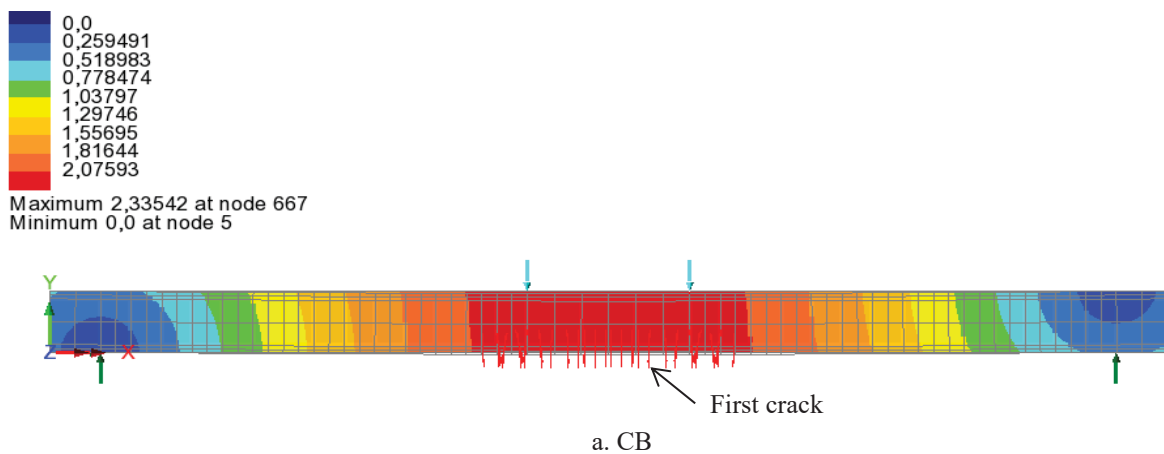


FIGURE 12. Load-strain curves

As shown, the longitudinal rebars has reached the yielding strain of $1500 \mu\epsilon$ and the concrete also has reached the ultimate strain of $2500 \mu\epsilon$. The longitudinal rebars were yielded before the failure of concrete at the compression zone. This was a typical under-reinforced failure mode. Therefore, the use of foamed concrete at the hybrid beams did not change the failure mode of the beam which was failed under crushing of compression concrete.

Crack Pattern

Figure 13 showed the crack pattern of all beams at the first crack. The first crack of CB, HB-50 and GHB-100 was 5 kN, 5 kN and 4 kN, respectively. This crack occurred at the constant moment region. Further loading after the appearance of the first crack, the other cracks appeared while the existing cracks propagated. The propagation of the cracks moved toward the compression concrete. The long cracks were concentrated in the constant moment region at the span center.



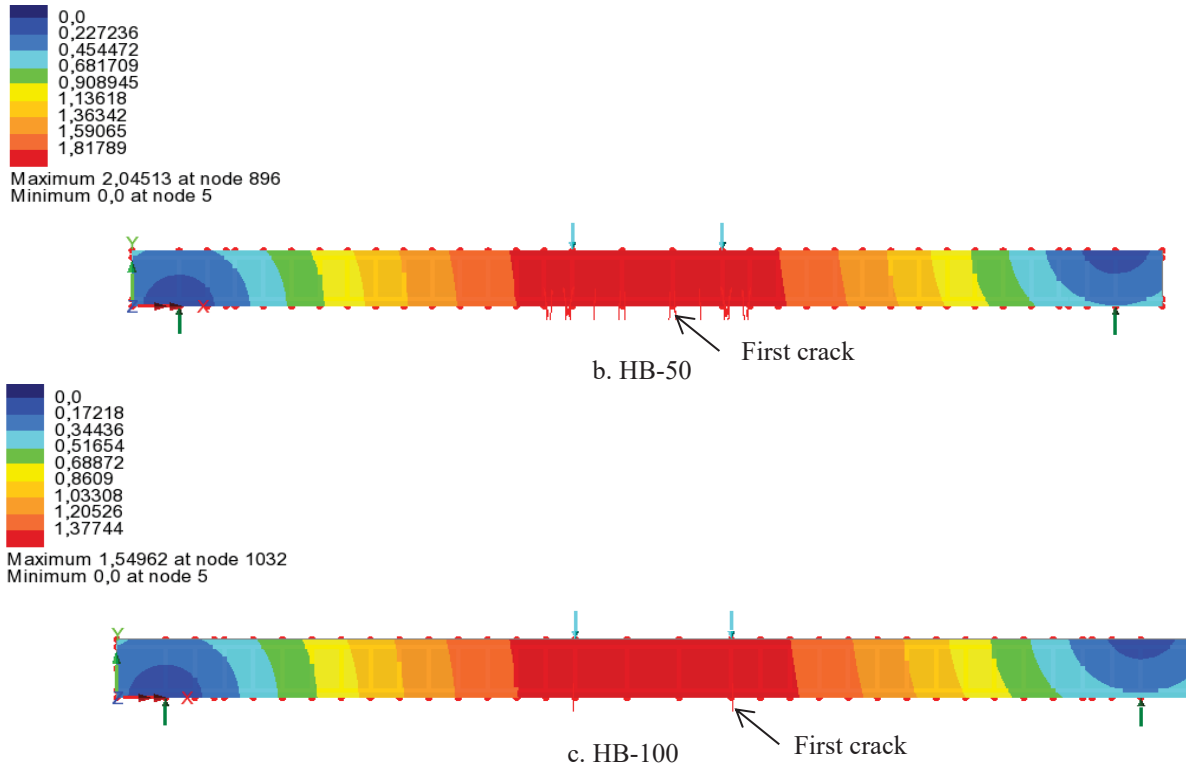
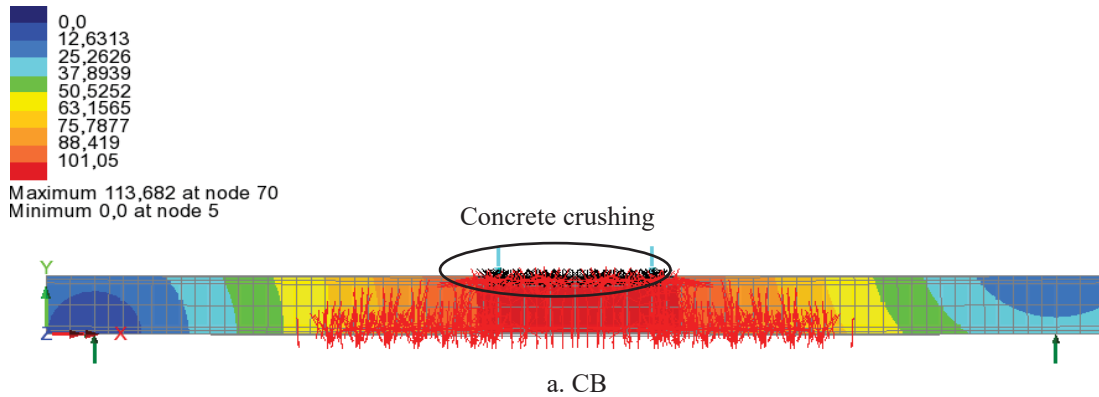


FIGURE 13. Crack pattern at the first crack

Figure 14 shows the crack pattern of all beams at the ultimate load. The ultimate load of CB, HB-150 and HB-100 was 30.2 kN, 21.3 kN and 20.9 kN, respectively. Comparing to cracks number of the normal beams, the number of cracks on HB-50 and HB-100 was larger. The long cracks were concentrated in the constant moment region at the span center. The number of cracks on the tensile zone of the concrete on HB-50 and HB-100 was larger than that of CB. This was because the foam concrete has a low tensile strength compared to normal concrete. Also, the cracks that occur in the foam concrete do not propagate upward to the normal concrete layer. This was because there are interfaces in the foam concrete and normal concrete, thereby reducing the composite action of the beam.



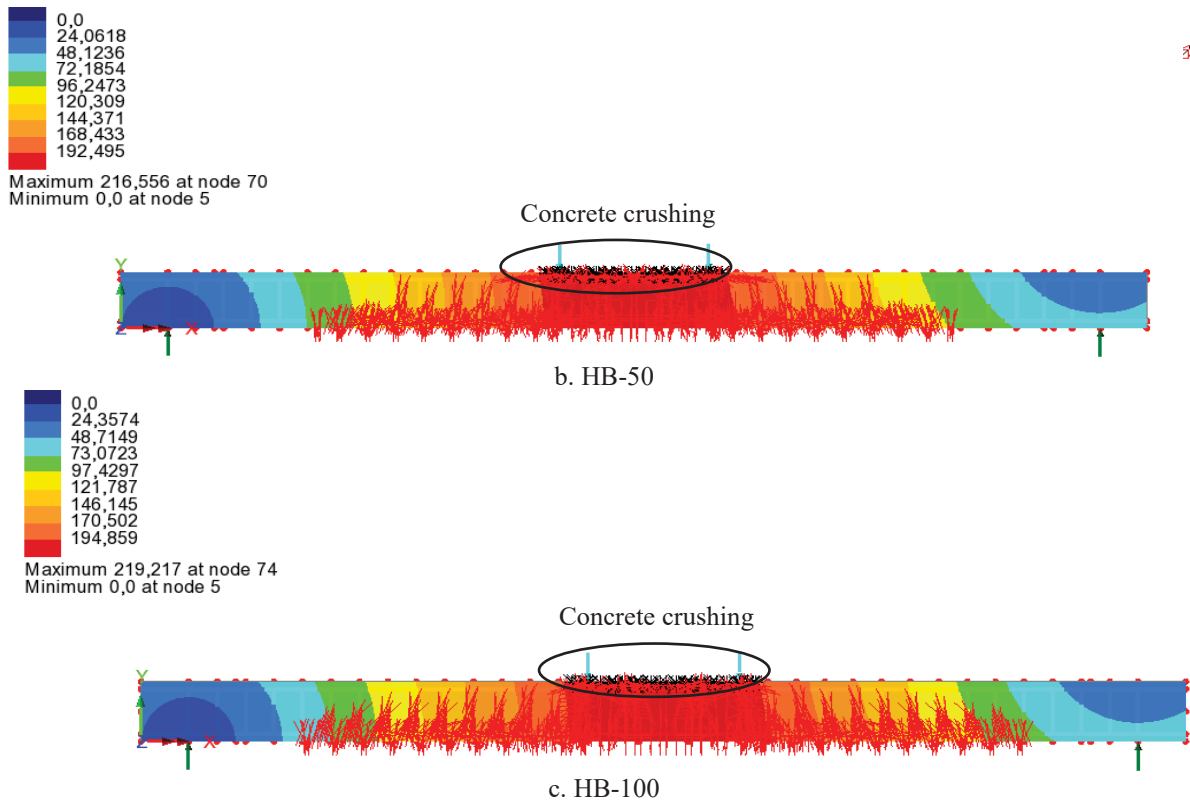


FIGURE 14. Crack pattern at the failure

CONCLUSIONS

The flexural performance of hybrid composite beams made of normal concrete and foamed concrete was conducted by using FEM Analysis, lead to the following conclusion:

1. The use of foamed concrete at hybrid composite beams reduced the ultimate load of the beams compared to the control beam, the ultimate load of HB-50 and HB-100 was decreased by 29.5% and 30.8%, respectively.
2. The different depths of foamed concrete at the hybrid beams had an insignificant effect on the ultimate load. The ultimate load of hybrid beam with 50 mm depth of foamed concrete was almost similar to 100 mm depth.
3. The number of cracks on HB-50 and HB-100 was larger than that of CB. This was because the foam concrete has a low tensile strength compared to normal concrete. In addition, some cracks in foam concrete do not propagate upward to the normal concrete layer. This was because there are interface in the foam concrete and normal concrete.

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- Mechanical and Industrial Engineering (MCH)
- Naval Architecture, Ocean, and Marine Engineering (NAV)
- Electrical and Informatics Engineering (ELC)
- Architecture and Urban & Regional Development (ARC)
- Geology and Mining Engineering (GEO)
- Multidisciplinary Engineering (MUL)

Organized by:

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Sungguminasa, South Sulawesi, Indonesia 92171
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About EICSE 2020

The 4th EPI International Conference on Science and Engineering abbreviated as EICSE is an annual international conference held by Center of Technology (COT), Faculty of Engineering, Universitas Hasanuddin. The conference is one of the activities conducted to commemorate the anniversary of Faculty of Engineering, Universitas Hasanuddin every year. The word “EPI” in the seminar name is an abbreviation of Eastern Part of Indonesia. The word is chosen considering that the seminar is held at Faculty of Engineering Campus, Universitas Hasanuddin which is the biggest engineering faculty in eastern part of Indonesia.

This conference is an invaluable opportunity to lectures and researchers to present and publish their research results. The authors participating in the conference would have a chance to publish their manuscript in an international journal or in a proceeding indexed by Scopus (in the process of agreement). Please access Publication page for more detail information related to publication options. One of the main aims of the conference is to strengthen research collaborations based on what so-called “triple helix” which consists of University, Industry, and Government (UIG). Therefore, the adopted theme of this year conference is “Strengthening UIG-based Research Collaboration and Innovation in Adapting to the Pandemic and Disruptive Era”

For this year conference, considering the global health crisis with coronavirus disease (COVID-19), all presentations are expected to be performed remotely using ZOOM application. Only limited numbers of offline presentations that will be accommodated with specific health procedure requirements.

Committees

Prof. Dr.Ir. Muhammad Arsyad Thaha, M.T.
Prof. Baharuddin, S.T., M.Arch., Ph.D.
Dr.Eng. Muhammad Rusman, S.T., M.T.
Mukti Ali, S.T., M.T., Ph.D.
Dr.Eng. Faisal Mahmuddin, S.T., M.Inf.Tech., M.Eng.
Dr. Muhammad Zubair M. Alie, S.T., M.T.
Nur Fitriani, S.T.
Dr.Eng. Ir. Muhammad Ramli, M.T.
Dr.Eng. Nasruddin, S.T., M.T.
Dr.Eng. Achmad Yasir Baeda, S.T., M.T.
Dr. Indar Chaerah Gunadin, S.T., M.T.
Dr.Eng. Purwanto, S.T., M.T.
Sabaruddin Rahman, S.T., M.T., Ph.D.
Dr. Edward Syarif, S.T., M.T.
Ir. Syerly Klara, M.T.
Dr.Eng. Intan Sari Areni, S.T., M.T.
Dr.Eng. Muralia Hustim, S.T., M.T.
Dr.Eng. Abdul Mufti Radja, S.T., M.T.
Hamzah, S.T., M.T.
Ir. Zaenab, M.T.
Dr.Eng. Ilham Alimuddin, S.T., M.GIS
Amil Ahmad Ilham, S.T., M.IT, Ph.D.
Dr. Ir. Zuryati Djafar, M.T.
Muh Anshar, S.T., M.Sc., Ph.D.
Dr. Ir. Ulva Ria Irfan, M.T.
Dr. Ir. Rosmalina Hanafi, M.Eng.
St. Hijraini Nur, S.T., M.T.
Andi Ardianti, S.T., M.T.
Gafar Lakatupa, S.T., M.Eng.
Laode Muhammad Asfan Mujahid, S.T., M.T.
Gerard Antonini Duma, S.T., M.T.
Andi Besse Ryani Indah, S.T., M.T.
Azran Budi Arief, S.T., M.T.
Andi Karina Deapati, S.Ars., M.T.
Sahabuddin, S.T., M.Eng.
Nirmana Fiqra Qaidahiyani, S.T., M.T.
Anugrayani Bustamin, S.T., M.T.
Jumadil, S.T., M.M.
Kartiah Gani, S.E., M.M.
Abd. Kadir A. Rahman, S.E.
Syamsir Alam, S.K.M.
Nurmawati, S.P.
Susanti, S.Sos.
Herawati, S.Sos.
Supriani, S.T.
Mansur, S.Sos.
Baharuddin
Kaharuddin
Syamsuddin
Dirham, S. Pd., BASc
A. Ayu Andini, S.Pd.

IT Committees

Muhammad Sulprian Rais
Janu Adwiyanto, S.T.
Hafid Malik Dwi Putra, S.T.
Akbar Nurdin, S.Kom.
Mirza Taufan, S. Ap.

General Information

Registration Hours:

Registration takes place at the following schedule.

Tuesday, 6th October 2020 08:30-09:00 AM (GMT +8)

Wednesday, 7th October 2020 08:30-09:00 AM (GMT +8)

Presentation Guideline

For guidelines on how to present your paper in oral presentation, please refer to page 9-12.

Certificates

To get a Certificate of Attendance, please contact the committee.

Short Course Program

Geospatial Data Management using Geographical Information System (GIS)

Instructor:

1. Dr.Eng. Ilham Alimuddin, S.T., M.GIS

Lecturer in Geological Department, Geocomputation and Remote Sensing Laboratory, UNHAS and Chairman of Indonesian Society of Remote Sensing, *Masyarakat Ahli Penginderaan Jauh (MAPIN)*, South Sulawesi Branch

2. Andang Suryana, S.Hut., M.P., Ph.D.

Head of Watershed Management Laboratory, Forestry Faculty, UNHAS

Course Description:

The use of geospatial data is increasingly significant nowadays varying application in large spectrum from basic science to engineering applications. This course enables participant to deal with geospatial data, where to obtain them, what kind of data format, extracting them from existing database as well as building and develop a geospatial database with Geographic Information Systems (GIS) software and platform. Geographic Information Systems (GIS) is computer-based data management in inventorying, editing, analyzing and displaying data with spatial references. This course is designed to introduce the participants to the basic principles and techniques of GIS. The practical work will emphasize GIS data collection, entry, storage, analysis, and output using ArcGIS. The course will also introduce types of spatial data available that can be extracted from the internet.

Participants will learn:

1. Basic of Geospatial Data and Cartographic Components of Maps
2. Principle concept of Geographic Information Systems
3. Components of GIS
4. Dealing with Geospatial Data
5. Georeferencing, Digitizing and Making Geodatabase
6. Visualizing and Map Lay outing
7. Introduction to Building Geodatabases for various applications

Course Duration: 5 hours

GENERAL SCHEDULE

Tuesday, 6th October 2020

Time	Program
08.30 – 09.00	Registration
09.00 - 09.30	Opening Ceremony
09.30 – 10.20	Keynote Speaker 1 Prof. Ir. Nizam, M.Sc., DIC, Ph.D Director General of Higher Education Kemendikbud RI
10.20 – 11.10	Keynote Speaker 2 Prof. Dr. Ir. Rudy Djamaluddin, MEng Acting Mayor of Makassar
11.10 – 12.00	Keynote Speaker 3 Prof. Yoshihiro Narita Hokkaido University
12.00 – 13.00	Break
13.00 – 15.15	Parallel Session 1 / Short Course on GIS (1)
15.15 – 15.45	Break
15.45 – 17.00	Parallel Session 2 / Short Course on GIS (2)

Wednesday, 7th October 2020

Time	Program
08.30 – 09.00	Registration
09.00 - 09.45	Keynote Speaker 4 Prof. Robert De Souza National University of Singapore
09.45 – 10.30	Keynote Speaker 5 Prof. Hirofumi Hinata Ehime University
10.30 – 11.15	Keynote Speaker 6 Dr. Muqtadha Ali Khan University Kelantan Malaysia
11.15 – 12.15	Parallel Session 3
12.15 – 13.15	Break
13.15 – 15.15	Parallel Session 4 / Short Course on GIS (3)
15.15 – 15.45	Break
15.45 – 17.00	Parallel Session 5