Professor Ehab Hamed

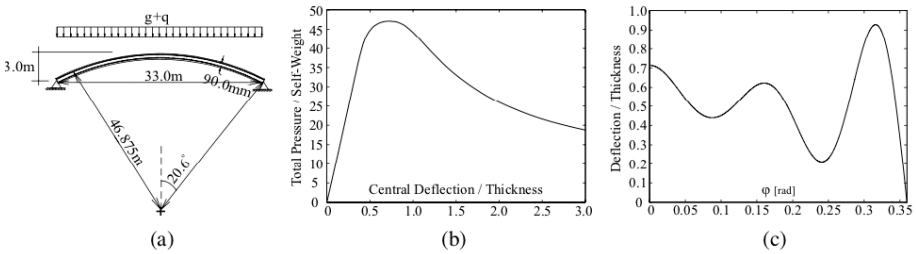

Figure 2. Numerical example: (a) geometry of a shallow dome; (b) short-term loading equilibrium path; (c) axisymmetric buckling mode.

From: Hamed E; Bradford MA; Gilbert RI, 2010, 'Creep buckling of imperfect thin-walled shallow concrete domes', Journal Of Mechanics Of Materials And Structures, vol. 5, pp. 107 – 128

See:
https://www.engineering.unsw.edu.au/civil-engineering/staff/ehab-hamed
http://www.cies.unsw.edu.au/associate-professor-ehab-hamed
https://scholar.google.com/citations?user=grY0bx0AAAAJ&hl=en
https://www.researchgate.net/profile/Ehab_Hamed

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Summary:

Professor Ehab Hamed was drawn to the field of structural engineering where he saw an immense opportunity to find ways to enhance the safety and efficiency of civil engineering infrastructure in a constantly changing world. He saw the opportunity to contribute to the industry by providing structural solutions that are more economic, energy-efficient, environmentally friendly and sustainable.
One such area is the use of precast concrete that is commonly used in modern construction techniques. Precast concrete walling is a great alternative to traditional construction techniques. The benefits offered by precast walling along with the growing availability of mobile cranes and the rising cost of bricklaying, have seen precast panels becoming the product of choice in the Australian construction market. In many cases, however, precast concrete wall panels are used without enough research findings to support methodologies.
Dr Hamed is investigating various aspects of walls panels including creep effects in high-strength concrete panels and the design and analysis of modern insulating precast concrete sandwich panels. Sandwich panels are light in weight and energy efficient as they include an insulation foam material that is sandwiched between two thin concrete layers. He has developed new numerical models that are capable of predicting the structural response and has conducted novel experimental programs on full-scale panels that were not conducted elsewhere in the world. Through these he is hoping to gain a better understanding of the structural behaviour of these very popular construction elements.
Ultimately Dr Hamed aims to establish design guidelines and recommendations that will utilise their best advantages as energy-efficient and load carrying members – which will be extremely valuable from a practical perspective to design engineers. He aims to do that through his extensive involvement in national and international Standards committees. Amongst other roles he is a member of ACI (American Concrete Institute) Committee 209: Creep and Shrinkage in Concrete and ACI Subcommittee 209-0D: Numerical Methods and 3D Analyses, and a Member of Standards Australia's AS3600 Sub-Committees: BD-002-01 Strength and Analysis of Concrete Structures, BD-002-07 Design for Serviceability of Concrete Structures.

Education:

2007 Ph.D. Structural Engineering, Civil and Environmental Engineering, Technion, Israel.

2003 M.Sc. Structural Engineering, Technion, Israel.
2000 B.Sc. Civil Engineering, Technion, Israel.

Selected Publications:

Huang Q; Hamed E; Gilbert RI, 2020, 'Experimental and Numerical Investigation of the Flexural Behaviour of Composite Prefabricated Concrete Sandwich Panels', in Lecture Notes in Civil Engineering, pp. 123 – 130

Hamed E; Frostig Y, 2020, 'Nonlinear thermo-mechanical behaviour of soft core sandwich panels – Creep effects', Journal of Sandwich Structures and Materials, vol. 22, pp. 2629 - 2654

Huang Q; Hamed E; Gilbert RI, 2020, 'Behavior of Concrete Sandwich Panels under Eccentric Axial Compression—Testing and Finite Element Analysis', ACI Structural Journal, vol. 117, pp. 235 – 247

Huang Q; Hamed E, 2019, 'Nonlinear finite element analysis of composite precast concrete sandwich panels made with diagonal FRP bar connectors', Composite Structures, vol. 212, pp. 304 – 316

Hamed E, 2018, 'Creep in precast-concrete sandwich panels made with diagonal-bar shear connectors', Journal of Engineering Mechanics, vol. 144

Huang Y; Hamed E; Chang ZT; Foster SJ, 2018, 'Time-dependent buckling testing of eccentrically loaded slender high-strength concrete panels', ACI Structural Journal, vol. 115, pp. 41 – 51

Hamed E, 2016, 'Modeling, analysis, and behavior of load-carrying precast concrete sandwich panels', Journal of Structural Engineering (United States), vol. 142

Hamed E; Frostig Y, 2016, 'Geometrically nonlinear creep behavior of debonded sandwich panels with a compliant core', Journal of Sandwich Structures and Materials, vol. 18, pp. 65 – 94

Hamed E; Frostig Y, 2016, 'Influence of creep on the geometrically nonlinear behavior of soft core sandwich panels', International Journal of Mechanical Sciences, vol. 105, pp. 398 – 407

Hamed E; Chang ZT; Rabinovitch O, 2015, 'Strengthening of reinforced concrete arches with externally bonded composite materials: Testing and analysis', Journal of Composites for Construction, vol. 19

Huang Y; Hamed E; Chang Z-T; Foster SJ, 2014, 'Theoretical and Experimental Investigation of Failure Behavior of One-Way High-Strength Concrete Wall Panels', Journal of Structural Engineering, vol. 04014143-1

Hamed E; Huang Y, 2013, 'Buckling of One-Way High-Strength Concrete Panels: Creep and Shrinkage Effects', Journal of Engineering Mechanics - ASCE, vol. 139, pp. 1856 – 1867

Hamed E, 2012, 'Bending and Creep Buckling Response of Viscoelastic Functionally Graded Beam-Columns', Composite Structures, vol. 94, pp. 3043 – 3051

Hamed E; Bradford MA; Gilbert RI; Chang Z, 2011, 'Analytical model and experimental study of failure behavior of thin-walled shallow concrete domes', Journal of Structural Engineering - ASCE, vol. 137, pp. 88 – 99

Hamed E; Rabinovitch O, 2011, 'Free Out-of-Plane Vibrations of Masonry Walls Strengthened with Composite Materials', Journal of Engineering Mechanics - ASCE, vol. 137, pp. 125 – 137

Hamed E; Bradford MA; Gilbert RI, 2010, 'Creep buckling of imperfect thin-walled shallow concrete domes', Journal Of Mechanics Of Materials And Structures, vol. 5, pp. 107 – 128

Hamed E; Bradford MA; Gilbert RI, 2010, 'Non-linear long-term behaviour od spherical shallow thin-walled concrete shells of revolution', International Journal of Solids and Structures, vol. 47, pp. 204 – 215

Hamed E; Rabinovitch O, 2009, 'Modeling and Dynamics of Sandwich Beams with a Viscoelastic Soft Core', AIAA American Institute of Aeronautics and Astronautics Journal, vol. 47, pp. 2194 – 2211

Hamed E; Bradford MA; Gilbert RI, 2009, 'Nonlinear Long-Term Behaviour of Spherical Shallow Thin-Walled Concrete Shells of Revolution', International Journal of Solids and Structures, vol. 47, pp. 204 – 215

Hamed E; Bradford MA; Gilbert RI, 2009, 'Time-dependent and thermal behaviour of spherical shallow concrete domes', Engineering Structures, vol. 31, pp. 1919 – 1929

Hamed E; Rabinovitch O, 2008, 'Masonry walls strengthened with composite materials - dynamic out-of-plane behavior', European Journal of Mechanics A - Solids, vol. 27, pp. 1037 – 1059

Hamed E; Rabinovitch O, 2007, 'Geometrically Nonlinear Effects in the Flexural Response of Masonry Walls Strengthened with Composite Materials', Journal Of Mechanics Of Materials And Structures, vol. 2, pp. 829 - 855

Hamed E; Rabinovitch O, 2007, 'Out-of-Plane Behavior of Unreinforced Masonry Walls Strengthened with FRP Strips', Composites Science and Technology, vol. 67, pp. 489 – 500

Hamed E; Frostig Y, 2006, 'Natural frequencies of bonded and unbonded prestressed beams–prestress force effects', Journal of Sound and Vibration, vol. 295, pp. 28 - 39
Hamed E; Rabinovitch O, 2005, 'Dynamic Behavior of Reinforced Concrete Beams Strengthened with Composite Materials', Journal of Composites for Construction, vol. 9, pp. 429 - 440