

Dr. Yehya Tamsah

Senior Structural Engineer | Professor | Technical Consultant

Nationality: Lebanese | **Date of Birth:** 1962

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Professional Summary

Distinguished civil engineer and academic with over 30 years of experience in structural design, consulting, and education. Specialized in reinforced and prestressed concrete structures, seismic design, and infrastructure rehabilitation. Proven expertise in managing complex bridge, tunnel, and high-rise building projects across the Middle East, Central Asia, and Africa. Currently serving as Professor and Assistant Dean at Beirut Arab University. Published extensively in leading engineering journals and conferences. Fluent in Arabic, English, and French.

Education

Ph.D. in Soil and Structural Mechanics

École Centrale de Paris, France – 1993

Master of Science (DEA) in Mechanics of Solids

Université Pierre et Marie Curie (Paris VI) – 1990

B.Sc. in Civil Engineering

Beirut Arab University – 1986

Key Qualifications

- Over three decades of leadership in structural design, modeling, and consultancy, with direct coordination alongside leading architects.
- Comprehensive review and evaluation of structural engineering documents: drawings, technical specifications, design reports, and calculations.
- Direction of multidisciplinary teams in the planning, design, and supervision of structural components for infrastructure and high-rise developments.
- Expertise in reinforced and prestressed concrete structures, advanced structural analysis, seismic design, and building information modeling (BIM).

- Experienced in structural rehabilitation, retrofitting, and capacity assessment of existing buildings and bridges.
- Technical quality control, shop drawing development, and supervision of execution works for major civil and infrastructure projects across multiple countries.

Professional Memberships

- **Since 1986:** Member, Lebanese Order of Engineers and Architects – Beirut
- **1992–1993:** Member, Groupe d’Étude du Comportement Thermo-Élastique du Béton – Paris
- **1997–2016:** Member, Lebanese Concrete Code Standardization Committee
- **2003–2010:** Member, Commission Régionale d’Experts (CRE), Agence Universitaire de la Francophonie – Beirut
- **2005–Present:** Member, National Committee for Seismic Design Code Development – Beirut

Languages

Language	Reading	Speaking	Writing
Arabic	Native	Native	Native
English	Fluent (5/5)	Fluent (5/5)	Fluent (5/5)
French	Fluent (5/5)	Fluent (5/5)	Fluent (5/5)

Academic Experience & Teaching

2016–Present: *Assistant Dean / Professor*, Beirut Arab University (BAU) & Lebanese University

1996–Present: *Lecturer in Civil Engineering*

Courses Taught:

- Reinforced & Prestressed Concrete Design
- Strength and Properties of Materials

- Special Topics in Concrete Structures
- Numerical Modeling of Structures
- Seismic Analysis & Earthquake Engineering
- Water Tanks and Hydraulic Structures
- R.C. and P.C. Bridges
- Tall Buildings
- BIM and Advanced Modeling Techniques

Software & Training Supervision:

- Supervised and delivered training programs in: STAAD, SAP2000, ETABS, SAFE, ROBOT Millennium, ADAPT
- Provided technical support for ROBOT Millennium users through El-Sharif & BML (official distributors in Lebanon)
- Contributed to the development of FEM-based software for non-linear 3D structural and thermal analysis (CEA-France and CEBTP-France)

Professional Experience

Senior Structural Engineer

TEG Consultants S.A.R.L., Lebanon | 1998 – Present

1. Bridges, Tunnels & Transport Infrastructure

Led the design, review, and supervision of numerous large-scale bridge and tunnel projects, both in Lebanon and internationally:

- **Majdel Anjar Interchange Project (Lebanon, 2021–2022)**
Design and supervision of multi-span post-tensioned precast girder bridges crossing the Litani River. Full structural design, shop drawings, quality control.
- **Suusamyr–Talas–Taraz Road Project (Kyrgyzstan, 2011–2016)**
Full infrastructure design supervision, including roadworks, drainage, culverts, retaining walls, and structural design of sub- and superstructures.
- **Saadiyat Island Fishing Port Bridge (UAE, 2009–2011)**
Structural lead for bridge and marine infrastructure: pontoons, ramps, platforms, and related buildings including maintenance yards and auction halls.

- **King Fahd & King Abdullah Interchanges (KSA, 2009–2010)**
Design of multiple prestressed concrete bridges and RC tunnels across major arterial routes.
- **Kulyab–Kalaikhumb Road Project (Tajikistan, 2008–2009)**
Assessment and retrofit of steel/RC bridges; design of 12 new steel bridges over rivers and valleys.
- **Beirut Outer Ring Viaducts (Lebanon, 1994–1996)**
Design of curved and skew prestressed concrete bridges, hollow core decks, and RC bridge systems.

2. Infrastructure, Water & Environmental Projects

- **Bekaa Sewage Treatment Plant (Lebanon, 2020–Ongoing)**
Design and supervision of civil works for treatment tanks, digesters, pump stations, control buildings, and quality control.
- **Jabal Amel Water Supply Project (Lebanon, 2009–2011)**
Engineering supervision for 160+ km of pipelines, reservoirs (up to 5000 m³), water towers, and pumping stations.
- **South Beirut Coastal Collectors (Lebanon, 2006–2009)**
Oversight of gravity and pressure wastewater networks, pumping stations, and tunneling works.
- **MSW Treatment Plant – Saida (Lebanon, 2003–2009)**
Structural design of large-span halls, digesters, tanks (up to 21,000 m³), and post-tensioned slabs.
- **Thamar University Water Tank (Yemen, 2004)**
Design of a 600 m³, 36 m high RC tank including wind and seismic considerations.

3. Towers & High-Rise Buildings

- **Wazzan & Ghaith Towers (Lebanon, 2009–2011)**
Structural design of three towers (31–45 floors) with six shared basements using RC and post-tensioned elements.
- **Sky Towers Residential Complex (Lebanon, 2008–2011)**
Ten towers (12–22 floors) and club buildings with full structural analysis and design.

- **Qatar Twin Towers Project (2006–2007)**

Two 49-story towers with post-tensioned floors and deep foundations; designed for wind tunnel forces and seismic zones.

- **Al Mutak Towers – Makkah & Jeddah (Saudi Arabia, 2006–2007)**

High-rise buildings (up to 270 m) with advanced seismic and wind analysis.

- **Palm Twin Towers (Qatar, 2005–2006)**

Twin 57-story residential towers and parking podium. Full structural modeling and foundation design.

4. Health Facilities & Medical Infrastructure

- **200-Bed Maternity & Pediatric Hospital (Kurdistan Region, Iraq)**

- **200-Bed Emergency Hospital (Kurdistan Region, Iraq)**

- **200-Bed Rehabilitation Center (Kurdistan Region, Iraq)**

All three projects involved:

- Design and coordination of structural systems across six floors and two basement levels.
- Integration of mechanical spaces, service zones, and seismic-resistant RC framing.

5. Structural Rehabilitation, Retrofitting & Strengthening

- Structural assessment, strengthening, and rehabilitation of more than 30 buildings between 2001 and 2022, including:
 - **Bashoura School & Bridge**
 - **Salha & Skafi Residential Buildings**
 - **Medrar Hospital**
 - **Prison Facilities and Control Towers (Lebanese Army)**
 - **Public Sector Buildings (Ministry of Public Works, Jeb Jenin Municipality)**

Responsibilities included seismic retrofitting, capacity checks, and tailored intervention strategies using CFRP, steel jacketing, and section enlargement.

Research and Publications

Research publications cover structural dynamics, blast and impact loading, seismic engineering, soil-structure interaction, concrete structures, and rehabilitation. The following list includes journal articles and conference contributions.

1. Hani Mekdasha, Lina Jaber, Yehya Temsah, Marwan Sadek. "Comparative analysis of anchored and pre-stressed pile walls: A case study of a water front project in Beirut, Lebanon", Materials & Structures, ICCMS-2022
2. Hani Mekdasha, Lina Jaber, Yehya Temsah, Marwan Sadek. "Reinforcement of Concrete Shoring Systems by Prestressing" Advances in Civil Engineering. 2022.
3. Yehya Temsah, Ali Jahami, Charles Aouad. "Silos Structural Response to Blast Loading" Engineering Structures, 2021.
4. C. Aouad, W. Chemissany, P. Mazzali, Y. Temsah, A. Jahami. "Beirut Explosion: TNT Equivalence from the Fireball Evolution in the First 170 Milliseconds". Shock Waves, November 2021.
5. Lina Jaber, Yehya Temsah, Zeinab Zein. Dynamic Soil Structure Interaction Analysis: Modelling the Piles as a Plate Element for a Multistory Building Resting on Deep Foundations". BAU Journal- Science and Technology. 2021.
6. Safwan Shahal, Oussama Baalbaki, Yehya Temsah, Hassan Ghanem. "Performance of Two-Way Hinges in Reinforced Concrete Structures" Magazine of Civil Engineering. 2021.
7. Al Rawi Y., Temsah Y., Baalbaki O., Jahami A., Darwiche M., "Experimental investigation on the effect of impact loading on behavior of post- tensioned concrete slabs", Journal of Building Engineering 31 (2020).
8. Ali Jahami, Yehya Temsah, Oussama Baalbaki, Jamal Khatib. "Strengthening of Post Tensioned Slabs Subjected to Impact Loading". 74th RILEM week and 40th cement and concrete conference. Sep. 2020.
9. Jahamy A., Temsah Y., Khatib J., Baalbaki O., Darwiche M., Chaaban S., "Impact Behavior of Rehabilitated Post-Tensioned Slabs Previously Damaged by Impact Loading", Magazine of Civil Engineering. 2020.
10. Jahami A., Temsah Y., Baalbaki O., Darwiche M., Al Rawi Y., Chaaban S. "Effect of Successive Impact Loads from a Drop Weight on a Reinforced Concrete Flat Slab" MATEC Web of Conferences 281, 02003 (2019) INCER 2019.
11. Mohamad Elani, Yehya Temsah. "Comparative Study of Modeling Methods Used to Simulate Initial Stresses in Prestressed Beams Towards Manual Analysis". Web of Conferences 281, (2019).

12. Ayman Trad, Tarek Sobhie, Hassan Ghanem, and Yehya Tamsah. "Seismic Assessment and Rehabilitation of a historical Masonry Mosque". Web of Conferences 281, (2019).
13. Jahamy A., Tamsah Y., Khatib J., "The Efficiency of Using CFRP as a Strengthening Technique for Reinforced Concrete Beams Subject to Blast Loading". International Journal of Advanced Structural Engineering, Sep. 2019.
14. Baraa Elmoussa, Yehya Tamsah, Ali Jahami. "Numerical Study for the Effect of Hairpin Shaped Shear Reinforcement on One-Way Shear Capacity of Reinforced Concrete Beams". MATEC Web of Conferences 281, (2019)
15. Yehya Tamsah, Ali Jahami, Jamal Khatib, M Sonebi, "Numerical Analysis of a Reinforced Concrete Beam under Blast Loading", MATEC Web of Conferences 149(3):02063, January 2018.
16. Lina Jaber, Yehya Tamsah, Yasser El-Mossallamy, Fadi Hage Chehade. "The Effect of Underground Stories on the Dynamic Response of High Rise Buildings". 2nd GeoMeast International Congress and Exhibition on Sustainable Civil Infrastructures. Egypt 2018.
17. Youmn Al Rawi, Yehya Tamsah, Ali Jahami. "The Effect of Impact Loads on Prestressed Concrete Slabs". International Structural Engineering and Construction Conference. July 2018.
18. Milad Khatib, Zaher Abou Saleh, Oussama Baalbaki, Yehya Tamsah. "Numerical Punching Shear Analysis of Unbonded Post-Tensioned Slabs with Inverted U-Shape". KSCE Journal of Civil Engineering. July 2018.
19. Tamsah Y., Jahami A., Khatib J., Sonebi M., "Numerical Derivation of Iso-Damaged Curve for a Reinforced Concrete Beam Subjected to Blast Loading", MATEC Web of Conferences 149(3):02016, January 2018.
20. Al Rawi Y., Tamsah Y., Ghanem, H., Jahami, A. and Elani, M. (2018). "The Effect of Impact Loads on Prestressed Concrete Slabs". The Second European and Mediterranean Structural Engineering and Construction Conference. [online] ISEC. Available at: https://www.isec-society.org/ISEC_PRESS/EURO_MED_SEC_02/html/STR-28.xml [Accessed 6 Aug. 2018].
21. Elani, M., Tamsah Y., Ghanem H., Jahami, A. and Al Rawi Y. (2018). "The Effect of Shear Reinforcement Ratio on Prestressed Concrete Beams Subjected to Impact Load". The Second European and Mediterranean Structural Engineering and Construction Conference. [online] ISEC. Aug. 2018.

22. Jahami A H., Temsah Y A., Khatib J., Sonebi M., “Numerical Study For The Effect of Carbon Fiber Reinforced Polymers (CFRP) Sheets on Structural Behavior of Posttensioned Slab Subjected to Impact Loading”, Proceedings of the Symposium on Concrete Modelling – CONMOD2018 , RILEM PRO 127, Edited by Erik Schlangen et al., 2018.
23. Sandy Chaaban, Oussama Baalbaki, Yehya Temsah. “Effect of Concrete Creep on the Shortening of Vertical Elements in High-Rise Buildings”. International Structural Engineering and Construction. July 2018.
24. Jaber J A., Temsah Y A., Hage Chehade F., El-Mossallamy Y., “Effect of Soil - Structure Interaction Constitutive Models on Dynamic Response of Multi-Story Buildings”. Journal of Engineering Science and Technology Review, w 11 (3) (2018).
25. Sabra M Y., Temsah Y A., Baalbaki O M., Abou Mosleh Z., “Repair of Damaged Prestressed Concrete Beams Using CFRP Fabric and Stitching Techniques”. International Journal of Civil Engineering and Technology (IJCIET) Volume 9, Issue 10, October 2018.
26. Temsah, Y., Jahami, A., Khatib, J. and Firat, S. “Numerical study for RC beams subjected to blast waves”. First International Turkish World Engineering and Science Congress in Antalya. Antalya, Turkey. (2017).
27. Temsah, Y., Jahami, A., Khatib, J. and Firat, S. “Single Degree of Freedom Approach of a Reinforced Concrete Beam Subjected to Blast Loading”. First International Turkish World Engineering and Science Congress in Antalya. Antalya, Turkey. (2017).
28. Mehedene Mashaka, Hisham Basha, Yehya Temsah, Adnan Masri. “Optimization of Wall-Frame Resisting System in Buildings Subjected to Seismic Loads” Seventh Alexandria International Conference and Geotechnical Engineering. Egypt 2010.
29. Baalbaki O., Temsah Y., Masri A., “Enhancement of the Ductile Behavior of R.C. Frames Under Lateral Forces by Fiber-Paper Concrete”. Proceeding of the International Engineering Conference of Curtin University of Technology Sarawak, Malaysia November 2007.
30. Temsah Y., “On the Influence of Openings in the Seismic Response of Structural Walls”. Twelfth International Conference on Civil, Structural, and Environmental Engineering Computing, Funchal, Madiera, Portugal, September 2009.
31. Temsah Y., Basha B., El Souri A., “Softening of Joints in Reinforced Concrete Structures: A Non-Linear Dynamic Approach” Twelve International Conference on Civil, Structural, and Environmental Engineering Computing, Funchal, Madiera, Portugal, September 2009.

32. Challhoub M., Bouillard P., Verbrugge J.C., Tamsah Y., "Etude du Comportement Statique et Dynamique d'un Pieux Isolé Implanté dans le Sable par Éléments Finitis", Proceedings of the International Conference on the Applied Numerical Analysis, Beirut, Dec. 2005.
33. Daudeville L., "Impact of a Reinforced Concrete Roof Slab By Falling Rocks: Experiments and Modeling", *Rivista Italiana Di Geotecnica*, February 2004.
34. Baalbaki O., Tamsah Y., Sabra M., "Influence of Papers and Fibers on Damage and Structural Behavior of Reinforced Concrete Beams", *European Journal of Scientific Research*, Vol.4, Nb 3, 2.
35. Basha H., Itani M., Masri A., Tamsah Y., "Behavior of Typical Reinforced Concrete Buildings Under Earthquake Forces", 5th Speciality Conference of the Canadian Society for Civil Engineering", Saskatoon, Saskatchewan, Canada, June 2004.
36. Tamsah Y., Masry A., Basha H., "Numerical Simulation of the Structural Behavior of a Damaged Reinforced Concrete Building: AICSCE 5, Structural Engineering Dept., Faculty of Engineering, Alexandria, Egypt Dec. 2003.
37. Philippe Berthet-Rambaud, Yehya Tamsah, Laurent Daudeville, and Jacky Mazars. "Finite Element Modelling of Concrete Protection Structures Submitted to Rock Impacts" 16th ASCE Mechanics Conference, July 2003 Seattle, USA.
38. Masri A., Basha H., Tamsah Y., "Dynamic Behavior of Low-Rise Suspended Steel Building Subjected to Time History Analysis" AICSCE 5, Structural Engineering Department, Faculty of Engineering, Alexandria University, Alexandria, 21544 Egypt, Dec. 2003.