

CURRICULUM VITAE

Personal Information

Name: Rodrigo Retamales
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Birth Date: October 4th, 1975
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Current Position

Seismic Intelligence SpA (2019-Present)
Senior Consultant in Structural and Earthquake Engineering

Ruben Boroschek and Associates (1999-2019)
Senior Consultant in Structural and Earthquake Engineering

University of Chile (1999-Present)
Adjunct Professor Department of Civil Engineering

University of Los Andes (2010-Present)
Adjunct Professor Department of Civil Engineering

Education

University Degrees: **University of Chile**, Faculty of Physical and Mathematical Sciences, School of Engineering.

- 1998: Bachelor's in Engineering Sciences, Major in Civil Engineering.
- 1999: Civil Engineer, Major in Structures and Construction.

State University of New York, University at Buffalo, Department of Civil, Structural and Environmental Engineering.

- 2008: PhD in Structural and Earthquake Engineering.

Specialization

- Base isolation systems and energy dissipation devices.
- Performance based design of reinforced concrete and steel structures.
- Retrofit of reinforced concrete structures.
- Design of seismic protection systems for structural and non-structural systems (architectural elements and electrical/mechanical equipment).
- Seismic vulnerability and risk analysis of structural and non-structural systems.
- Experimental and analytical seismic qualification.

Professional Experience

- 1999 Design Engineer Fine Ore Stockpile project, commissioned by Mining Contractual Society El Abra, Chile.
- 1999 Seismic Vulnerability Assessment of Dr. Juan Noe Crevani Hospital, Arica, Chile. Use of ATC40 and FEMA273 methods for the assessment of seismic vulnerability of structural and non structural systems.
- 2000 Seismic Analysis and Retrofit of secondary crushers' support structures, Chuquicamata Division, Copper Corporation Chile.
- 2000 Elaboration of Technical Specifications for the Seismic Design of Structural and Non Structural Systems, Military Hospital.
- 2001 Damage Assessment in hospitals of El Salvador's Health Network after the Jan 13, 2001 Earthquake. On site emergency assessment of infrastructure. Pan-American Health Organization.
- 2001 Elaboration of Bidding Documents for the Structural and Functional Recovery of El Salvador's Health Network Hospitals. Pan-American Health Organization.
- 2001 Retrofitting of Dr. Juan Noe Crevani Hospital, Arica, Chile. Reviewer for the structural reinforcement project.
- 2002 Vibration Studies of the Steam Turbine, Mejillones Thermoelectrical Plant.
- 2002 Development of Guidelines for Earthquake Mitigation in Health Facilities, commissioned by World Health Organization and World Bank.
- 2002 Vibration Assessment Urban Transportation Plan, commissioned by Ministry of Transportation and Telecommunications.
- 2003 Assessment of Seismic Vulnerability, San Juan de Dios Hospital, Curico, Chile.
- 2003 Seismic Analysis of TP500V Potential Transformer. Seismic response Assessment of equipment mounted on frictional ring type energy dissipation devices.
- 2003 Seismic Analysis of TCH550 Current Transformer. Seismic response Assessment of equipment mounted on frictional ring type energy dissipation devices.
- 2003 Seismic Analysis of the Supportive Structure of the Main Crusher, Radomiro Tomic Division, Copper Corporation Chile.
- 2004 Structural design Parque Yungay Condominium, 200,000 ft².
- 2004-2008 Fellowship Research Foundation of the State University of New York at Buffalo. Research engineer developer Nonstructural Component Simulator.
- 2009 Post-doctoral researcher Research Foundation of the State University of New York at Buffalo at Structural Engineering and Earthquake Simulation Laboratory.
- 2009 Peer reviewer Andina Thermal Power Plant.
- 2009 Peer reviewer electrical and mechanical equipment Mejillones LNG Plant. GDF

Suez.

- 2009 Seismic and structural design bearings pedestrian bridge Clinica Bicentenario.
- 2009 Seismic and structural design bearings pedestrian bridge Marina Arauco Mall.
- 2009 Feasibility assessment of reducing operation vibrations in balls and bars mills, Chiquicamata Division Cooper Corporation Chile.
- 2010 Feasibility assessment of using energy dissipation devices in main tower Plaza Norte Mall.
- 2010 Peer reviewer energy dissipation system Yoemar building. IEC Ingenieros.
- 2010 Damage assessment Canete Hospital.
- 2010 Damage assessment Curanilahue Hospital.
- 2010 Damage assessment electrical and mechanical equipment Quintero LNG Plant.
- 2010 Damage assessment Chilquinta Corporate Building.
- 2010 Seismic risk assessment for industry infrastructure in Aysen fiord.
- 2010 Peer review seismic isolation system Maipu Hospital.
- 2011 Design seismic isolation system Student Services building Catholic University of Maule.
- 2011 Design seismic isolation system Technological Park building Catholic University of Maule.
- 2011 Feasibility assessment implementation seismic protection technologies in Serrano condominium.
- 2011 Seismic qualification KNAUF partition walls.
- 2011 Design energy dissipation devices Talca Square office building.
- 2011 Peer review accelerated construction hospitals in Curico, Talca and Cauquenes.
- 2011 Environmental vibration assessment accelerated construction hospital in Curico.
- 2011 Feasibility assessment implementation seismic protection technologies in Apoquindo 2929 office building.
- 2011 Vibration assessment for vehicle loading and velocity characterization in La Cisterna Intermode Station.
- 2011 Feasibility assessment implementation seismic protection technologies in Neocentro building. Inmobiliaria Numancia.
- 2011 Development of bidding documents for the rehabilitation of Putaendo Psychiatric Hospital.

2011	Design seismic Isolation system Claro Data Center. Claro.
2011	Design energy dissipation system Costa Laguna Antofagasta A condominium. Inmobiliaria Aconcagua.
2011	Design seismic Isolation system Torre del Sol condominium. Cosntructora Alcorp.
2011	Peer review ROLEC Electrical Rooms for MMH Project. Rolec.
2011	Feasibility assessment implementation seismic protection technologies in River building. Inmobiliaria Lagies
2011	Operation vibration assessment Beaucheff Poniente building. IDIEM.
2012	Feasibility assessment implementation seismic protection technologies in Terra building. Inmobiliaria VIMAC Ltda.
2012	Peer review reinforcement accelerated construction hospitals in Curico, Talca and Cauquenes.
2012	Collaboration in design seismic isolation system Mistral office building.
2012	Peer review ROLEC Electrical Rooms for MMH Project.
2012	Seismic assessment skylights Los Angeles Hospital. Moller and Perez-Cotapoz.
2012	Design seismic isolation system Therapeutic Diagnostic Center Catholic University of Maule.
2012	Design seismic isolation system Nunoa Capital condominium. Inmobiliaria Armas.
2012	Design seismic isolation system Mirador Condominium. Inmobiliaria Armas.
2012	Feasibility assessment implementation seismic protection technologies in Ultramar building. Inversiones Ultraterra.
2012	Design energy dissipation system Costa Laguna Antofagasta B condominium. Inmobiliaria Aconcagua.
2013	Peer review storage silos Sierra Gorda project. Fluor Chile.
2013	Design seismic isolation system Sunset building. Inmobiliaria Armas.
2013	Peer review ROLEC Electrical Rooms for Potrerillos Codelco Project. Arcadis.
2013	Design seismic isolation system and specialist seismic vulnerability Salvador Hospital and National Institute of Geriatrics. IDOM Chile.
2013	Seismic vulnerability assessment mechanical equipment Maipu and La Florida Hospitals. Contacus.
2013	Peer review Amura Condominium. Inmobiliaria Almagro.

- 2013 Design energy dissipation devices Titanium Copiapo building. Inmobiliaria Sen-arq.
- 2013 Design seismic isolation system Meissner Museum. Pezo von Ellrichshausen.
- 2013 Feasibility assessment implementation seismic protection technologies in stor-age silos for Guacolda project. Metacontrol Engineers.
- 2013 Design seismic isolation system and specialist seismic vulnerability Marga Mar-ga Provincial and Quillota-Petorca Bi-provincial Hospitals. Swarq+LVA archi-tects.
- 2013 Design seismic isolation system Indumotora Las Condes building. Indumotora S.A.
- 2013 Seismic vulnerability assessment UK ambassador residence in Santiago. FCO Services.
- 2014 Specialist in structural and nonstructural seismic vulnerability mitigation for Sub-way Line 6. IDOM Chile.
- 2014 Design seismic isolation system Los Castanos condominium. Inmobiliaria Icafal.
- 2014 Collaboration in design seismic isolation system Aconcagua Industrial Park of-ice buildings.
- 2014 Feasibility study for the replacement of cover in Subway Line 6 tunnel. Consorti-um Zanartu-Geocontrol.
- 2014 Peer review Portofino Condominium. Inmobiliaria Almagro.
- 2015 Rubén Boroschek y Asociados Ltda. Revisión Sísmica Sala Eléctrica EATON 400-ER-001 Codelco Chile División Gabriela Mistral.
- 2015 Assessment of effects of using seismic isolation in Claro Datacenter building.
- 2015 Specialist for seismic vulnerabilty mitigation in New Worker's Hospital in Santi-a-go.
- 2015 Per review electrical room EATON 622-ER-002 Codelco Chile, Gabriela Mistral Mining.
- 2015 Critical analysis CAPEX for expansion alternatives Sika Chile Plant.
- 2015 Design seismic isolation system Festival Condominium, Inmobiliaria y Construc-tora VIMAC.
- 2015 Risk analysis and mitigation measures for selected IIRSA infrastructures in Peru and Chile, Inter-American Development Bank.
- 2015 Design seismic isolation system Adaggio Condominium, Inmobiliaria y Construc-tora VIMAC.
- 2015 Design seismic isolation sistema Vina del Mar Hyatt Hotel, HRV S.A.

2015 Seismic structural and nonstructural retrofit Coquimbo hospital, Servicio de Salud de Coquimbo.

2015 Development of energy dissipation system for pounding prevention in Costa Golf Marbella Condominium.

2015 Design seismic isolation system CDEC-SIC control room.

2016 Optimization seismic isolation systems Chillan, Linares and Biprovincial Quillota Petorca Hospitals, IDOM-Moller Consortium.

2016 Peer review Rapallo condominium, Inmobiliaria y Constructora Almagro.

2016 Evaluation of safety margins for seismic isolation system Falabella Datacenter, ACECO TI.

2016 Design seismic isolation system LSST (Large Synoptic Survey Telescope) Datacenter.

2016 Peer review New Energy Chimney, SECON.

2016 Peer review Melipilla Hospital.

2016 Peer review Rimini Condominium. Inmobiliaria Almagro.

2017 Seismic qualification raised floor Gustavo Fricke Hospital, KNAUF.

2017 Vibration mitigation assessment for Extension Santiago Metro Subway Line 3.

2018 Feasibility assessment of using seismic isolation in ELEAM building project.

2018 Design seismic isolation system for MMA pedestrian bridge.

2018 Feasibility assessment of using energy dissipation devices in Puerto Montt Mall project.

2018 Preliminary design seismic isolation system Puerto Varas Hospital.

2018 Feasibility assessment of using energy dissipation devices in Shyris Quito project.

2018 Transfer function analysis and vibration assessment Santiago Metro Subway Line 6.

2018 Design seismic isolation system for National Electrical Coordinator data center.

2018 Design seismic isolation system for Tarapaca University.

2018 Design seismic isolation system Concepcion Industrial Bridge.

2019 Design seismic isolation system Puerto Varas Hospital.

2019 Design seismic isolation system Provincial Cordillera Hospital.

2019 Design seismic isolation system Datacenter Claro Buildings B5/B6

Academic Experience

Fall 1999 Teacher Assistant, Mechanics of Solids II. University of Chile.

Spring 1999 Lecturer, Mechanics of Solids I. University of Chile.

Fall 2000 Lecturer, Structural Analysis. University of Chile.

Spring 2000 Lecturer, Structural Analysis. University of Chile.

Fall 2001 Lecturer, Structural Analysis. University of Chile.

Spring 2001 Lecturer, Structural Analysis. University of Chile.
Teacher Assistant, Design and Construction of Bridges. University of Chile.

Fall 2002 Lecturer, Dynamics of Structures. University of Chile.

Spring 2002 Lecturer, Structural Analysis. University of Chile.
Lecturer, Design and Construction of Bridges. University of Chile.

Fall 2003 Lecturer, Dynamics of Structures. University of Chile.

Spring 2003 Lecturer, Structural Analysis. University of Chile.
Lecturer, Design and Construction of Bridges. University of Chile.

Fall 2004 Lecturer, Dynamics of Structures. University of Chile.

Spring 2009 Teacher Assistant, Passive and Active Structural Control. University at Buffalo.

Fall 2010 Professor, Steel Design. University of Los Andes.

Spring 2010 Professor, Advanced Reinforced Concrete. University of Los Andes.

Fall 2011 Professor, Steel Design. University of Los Andes.
Professor, Earthquake Engineering. University of Los Andes.

Spring 2011 Professor, Earthquake Engineering. University of Los Andes.

Fall 2012 Professor, Steel Design. University of Los Andes.
Professor, Earthquake Engineering. University of Los Andes.

Spring 2012 Professor, Earthquake Engineering. University of Los Andes.
Professor, Advanced Reinforced Concrete. University of Los Andes.

Fall 2013 Professor, Steel Design. University of Los Andes.
Professor, Advanced Reinforced Concrete. University of Los Andes.

Spring 2013 Professor, Earthquake Engineering. University of Los Andes.

Fall 2014 Professor, Earthquake Engineering. University of Los Andes.

Spring 2014 Professor, Earthquake Engineering. University of Los Andes.

Fall 2015	Professor, Steel Design. University of Los Andes.
Spring 2015	Professor, Earthquake Engineering. University of Los Andes.
Spring 2015	Professor, Passive Systems for Energy Dissipation and Seismic Isolation, University of Chile.
Fall 2016	Professor, Passive Systems for Energy Dissipation and Seismic Isolation, University of Chile.
Spring 2016	Professor, Earthquake Engineering. University of Los Andes.
Fall 2017	Professor, Earthquake Engineering. University of Los Andes. Professor, Passive Systems for Energy Dissipation and Seismic Isolation, University of Chile.
Spring 2017	Professor, Earthquake Engineering. University of Los Andes. Professor, Passive Systems for Energy Dissipation and Seismic Isolation, University of Chile.
Fall 2018	Professor, Passive Systems for Energy Dissipation and Seismic Isolation, University of Los Andes. Professor, Passive Systems for Energy Dissipation and Seismic Isolation, University of Chile.
Spring 2018	Professor, Earthquake Engineering, University of Los Andes. Professor, Steel Structures, University of Los Andes.
Fall 2019	Professor, Structural Analysis. University of Los Andes. Professor, Passive Systems for Energy Dissipation and Seismic Isolation, University of Chile.
Spring 2019	Professor, Earthquake Engineering. University of Los Andes. Professor, Passive Systems for Energy Dissipation and Seismic Isolation, University of Chile.

Other Activities

1997	Attendance, Seventh Chilean Congress on Seismology and Earthquake Engineering and 1 st Iberoamerican Congress on Earthquake Engineering, University of La Serena, Chile.
1998-1999	Participated in the "Seismic Isolation Group", Department of Civil Engineering, University of Chile, which was integrated by academics and student dedicated to research on seismic protection devices. "Design of Dissipation Devices for an Industrial Steel Building", Degree Thesis. The research consisted in the feasibility assessment of using energy dissipation devices in a copper concentrate silo. The thesis, guided by Mauricio Sarrazín and María Ofelia Moroni, was graded with the maximum grade given by the University of Chile.
2000	Attendance, "Reinforced Concrete Design Code, Based on the ACI318-99" Semi-

nar, Cement and Concrete Institute of Chile, Santiago, May 22, 2000.

Attendance, "Seismology for Engineers" Seminar, ACHISINA, Santiago, June 2-3, 2000.

2001 Attendance, "Reinforced Concrete Prefabricates in Seismic Zones" Seminar, Cement and Concrete Institute of Chile, Santiago, June 25-26, 2001.

Attendance, "LRFD Steel Structures Design" Course, Chilean Steel Institute, Santiago, November 29 - December 5, 2001.

Academic hierarchy of Part-time Adjunct Instructor conferred by The School of Engineering, University of Chile.

2002 Attendance, 8th Chilean Congress on Seismology and Earthquake Engineering, Federico Santa María University, Viña del Mar, Chile.

2003 Attendance, "Innovative Systems for Seismic Protection of Existing and New Structures: A Practical Approach" Seminar, Chilean Association of Seismology and Earthquake Engineering, Santiago, May 27-28 2003.

Attendance, "Criteria for Damage Evaluation and Decision Making on Disaster Situations in Hospitals" Workshop, World Health Organization, Arica, August 2003.

2006 Presenter 8th United States National Conference on Earthquake Engineering. San Francisco, April 18-22, 2006.

Training for operators MTS Systems Corporation equipment, Minneapolis, May 24-27, 2006.

Presenter in Multidisciplinary Center for Earthquake Engineering Research (MCEER) Annual Meeting, Washington D.C., June 16-19, 2006.

2007 Presenter in Workshop on Seismic Regulations and Challenges for Protecting Building Equipment, Components & Operations, Buffalo, New York, October 12, 2007.

Presents to the Applied Technology Council Committee 58 (ATC-58) the new technologies and procedures for experimental qualification and seismic fragility assessment of nonstructural systems and equipment, Buffalo, New York, October 13, 2007.

2008 Presenter in 6th NEES Annual Meeting, Portland, Oregon, June 18, 2008.

2008-2009 Technical Editor research reports Multidisciplinary Center for Earthquake Engineering Research (MCEER).

2010 Reconnaissance team of Earthquake Engineering Research Institute (EERI) for assessing damage following the 2010 Maule earthquake.

Attendance, X Chilean Conference on Seismology and Earthquake Engineering, May 24-27, Santiago, Chile.

Presenter in 9th United States and 10th Canadian Conference on Earthquake En-

gineering, July 25-29, Toronto, Canada.

Presenter in 2010 Technological Conferences Series, Chilean Chamber of Construction. Presentation: Seismic Vulnerability Mitigation in Hospitals.

President committee developing Chilean Code for Seismic Design Nonstructural Components and Systems, NTM-001. Construction Institute.

Presenter in workshop "New Codes and Recommendation for the Seismic Protection of Nonstructural Elements", Chilean Chamber of Construction, November 9, 2010.

Presenter in workshop "Recommendation for the Seismic Protection of Nonstructural Elements", INACAP, Talca branch, December 16, 2010.

2011 Technical editor "Seismic Protection Technologies" report, Chilean Chamber of Construction.

Member Executive Committee reviewing the standard MINVU NTM-006: Minimum seismic requirements for design, installation and operation of Elevators. Construction Institute.

Member Executive Committee reviewing the standard MINVU NTM-001: Chilean Code for Seismic Design Nonstructural Components and System. Construction Institute.

President committee in charge of updating Chilean Code NCh2745: Earthquake Resistant Design of Base Isolated Structures. Construction Institute.

Presenter in workshop "Seismic Protection Systems: Challenges for Engineers", organized by Chilean Chamber of Construction, October 14, 2011.

Presenter in IV Civil Structural Engineers Association Conference. Presentation: "Seismic Isolation of Structures", Santa Cruz, November 18-19, 2011.

Presenter in workshop organized by Universidad Autonoma de Chile. Presentation: "Alternatives for the Seismic Protection of Structures", Talca, November 25, 2011.

2012 Presenter in workshop organized by Chilean Chamber of Construction. Presentation: "Seismic Protection Systems, Alternatives and Benefits", Iquique, January 10, 2012.

Presenter in workshop organized by Chilean Chamber of Construction. Presentation: "Seismic Protection Systems, Alternatives and Benefits", Vina del Mar, January 13, 2012.

Presenter in workshop organized by Chilean Chamber of Construction. Presentation: "Seismic Protection Systems, Alternatives and Benefits", Antofagasta, March 13, 2012.

Presenter in workshop organized by Chilean Chamber of Construction. Presentation: "Seismic Protection Systems, Alternatives and Benefits", Arica, April 3, 2012.

Lecturer in 1st course on "Seismic Protection of Nonstructural Components and

Systems”, organized by the Chilean Chamber of Constructions, May 7-28, 2012.

Presenter in 1st Conference on Structural Engineering Projects, organized by the Civil Structural Engineers Association. Presentation: “Seismic Isolation of Torre del Sol Building”, Santiago de Chile, May 17, 2012.

Presenter in V Civil Structural Engineers Association Conference. Presentation: “Seismic Isolation of Tall Buildings”, Coquimbo, November 9-10, 2012.

2013

Presenter in workshop “Design of Seismic Isolation Systems for Buildings”, organized by the Civil Structural Engineers Association. Presentation: “Scope and Requirements of NCh2745.Of2003 Standard”, Santiago de Chile, March 26, 2013.

Lecturer in 2nd course on “Seismic Protection of Nonstructural Components and Systems”, organized by the Chilean Chamber of Constructions, March 18-April 1, 2013.

Presenter in 2nd Conference on Structural Engineering Projects, organized by the Civil Structural Engineers Association. Presentation: “Application of Concept of Isolated Block to the Seismic Isolation of Sunset Copiapo Condominium”, Santiago de Chile, May 14, 2013.

Presenter in “XII Symposium on Civil Engineering Pan-American University”, organized by Pan-American University, Guadalajara, Mexico, May 15-17, 2013. Presentation: “Seismic Protection of Nonstructural Components and Systems”.

Presenter in 13th World Conference on Seismic Isolation, organized by JSSI and ASSISI, September 24-27, 2013, Sendai, Japan. Presentation: “Seismic Base Isolation of the Nunoa Capital Building, the Tallest Base Isolated Residential Building in the Americas”.

Presenter in V Ecuadorian Conference on Earthquake Engineering, November 5-7, 2013, Guayaquil, Ecuador. Presentation: “Applications of Seismic Isolation Systems and Energy Dissipation Devices in Structures”.

2014

Presenter in 3rd Conference on Structural Engineering Projects, organized by the Civil Structural Engineers Association. Presentation: “Seismic Isolation of Indumotora Las Condes Building”, Santiago de Chile, June 5, 2014.

Presenter in workshop “Fundamentals Behind Energy Dissipation Systems and the Current Chilean Practice”, organized by the Chilean Association of Seismology and Anti-seismic Engineering, Santiago de Chile, July 17, 2014. Presentation: Application of Energy Dissipators in 550 kV Power and Current Transformers in Substations Alto Jahuel, Ancoa and Charrua”.

Presenter in workshop “Seismic Performance on Non-Structural Elements (SPONSE)”, co-organized by Institute of Engineering Mechanics (IEM) of the China Earthquake Administration and the Multidisciplinary Center for Earthquake Engineering Research (MCEER), Harbin, Popular Republic of China, August 29-31, 2014. Presentation: “Performance of Nonstructural Systems during the 2010 Mw8.8 Chile Earthquake and its Effects on Code Development”.

Presenter in I international Symposium on Earthquake Engineering, organized by University Vicente Rocafuerte, Guayaquil, Ecuador, October 13-17, 2014.

Lecturer in 3rd course on “Seismic Design of Nonstructural Components and Systems”, organized by the Chilean Chamber of Construction, October 20-25, 2014.

Presenter in workshop “Updating Seismic Code Regulations for Infrastructure Design”, Concepcion, December 2, 2014.

Presenter in workshop “Seismic Protection of Structures and Equipment”, National University of Cajamarca, Peru, December 10, 2014.

2015 Presenter in workshop “Updating Seismic Code Regulations for Infrastructure Design”, Iquique, January 15, 2015.

Presenter in XI Chilean Conference on Earthquake Engineering, March 18-20, 2015.

Presenter in workshop “Updating Seismic Code Regulations for Infrastructure Design”, Vina del Mar, March 24, 2015.

Presenter in workshop “Updating Seismic Code Regulations for Infrastructure Design”, Santiago, March 31, 2015.

Presenter “Seismic Protection for Infrastructure”, University of Valparaiso, June 4, 2015.

Presenter in workshop “Updating Seismic Code Regulations for Infrastructure Design”, Inacap University, Valparaiso, July 1, 2015.

Lecturer in 4th course on “Seismic Design of Nonstructural Components and Systems”, organized by the Chilean Chamber of Construction, July 20-25, 2015.

Presenter in workshop “Applications of Energy Dissipation Systems”, Chilean Association of Seismology and Earthquake Engineering, October 22, 2015.

Presenter in VI Ecuadorian Conference on Earthquake Engineering: “Application of Seismic Protection Systems for Structures placed on Soft and Stiff Soils”, Guayaquil, November 4-6, 2015.

Presenter in workshop on Earthquake Resistant design: “New Regulations for the Seismic Design of Nonstructural Components and Systems”, organized by Hilti, November 20, 2015.

2016 Lecturer in 4th course on “Seismic Design of Nonstructural Components and Systems”, organized by the Chilean Chamber of Construction, March 24-April 5.

Presenter in workshop “Curtain walls: Seismic Performance and Innovation”, organized by the Chilean Chamber of Construction, April 26, 2016.

Presenter in workshop on “New Trends and Regulations for the Seismic Design of Infrastructure”, organized by School of Architecture and Urbanism University of Chile, May 11, 2016.

Lecturer in the seminar “Energy Dissipation and Seismic Isolation Systems for the Seismic Protection of Infrastructure”, organized by the Pontifical Catholic University of Peru, Lima, May 30-June 1st.

Presenter in workshop on “Disaster Risk Management”, organized by IIRSA, UNASUR and COSIPLAN. Presentation: “Risk Analysis and Identification of Risk Mitigation Measures for Integration Infrastructure in Chile and Peru: Arica and Tacna Airports and Arica and Matarani Ports”, Lima, June 2-3.

Lecturer in Seminar on “Seismic Design Criteria for Bridge Structures”, co-organized by KIZUNA and Academy of Public Work Chile Government, September 26 to October 13, 2016.

Presenter in workshop on “Applications of Seismic Isolation Systems for Structural Protection”, organized by Chilean Association of Seismology and Earthquake Engineering, November 23.

2017 Scientific Committee Topic Leader, 16th World Conference on Earthquake Engineering, Santiago de Chile, January 9-13.

Presenter in seminar on “Seismic Vulnerability Mitigation”, co-organized by the Chilean Association of Hospital Architects and Specialists and the Chilean Chamber of Construction. Presentation: “Seismic Design of Nonstructural Components and Systems: Architectural Elements and Mechanical and Electrical Equipment”, Santiago, April 26.

Presenter in launching of book “Technical Recommendations to Minimize Seismic Effects on Water and Gas Utilities”, organized by Procobre Chile and Copper Alliance, May 4.

2018 Lecturer in Seminar on “Seismic Design Criteria for Bridge Structures”, co-organized by KIZUNA and Academy of Public Work Chile Government, July 26, 2018.

Presenter in workshop “Seismic Vulnerability of Guayaquil and Ecuador”, organized by American Society of Civil Engineers, ASCE Ecuador Group, Guayaquil August 23-25, 2018.

Presenter in workshop “Seismic Protection Systems for Structures”, organized by AIEP, Santiago, September 26, 2018.

Lecturer in Seminar on “Seismic Protection Systems for Structures”, co-organized by KIZUNA and Academy of Public Work Chile Government, September 27, 2018.

Presenter in workshop “Engineering for the Future”, co-organized by College of Engineers and Pan-American Confederation of Mechanical, Electrical and Industrial Engineers, Santiago, October 18-19, 2018.

Lecturer in Seminar “Innovative Applications of Technologies for the Seismic Protection of Structures”, Universidad Técnica Federico Santa María, October 31, 2018.

2019 Lecturer in the seminar “Energy Dissipation and Seismic Isolation Systems for the Seismic Protection of Infrastructure”, organized by the College of Engineers of Guatemala, Ciudad de Guatemala, January 22-24.

Presenter in XII Chilean Conference on Seismology and Earthquake Engineering, subject: Supplemental Damping for the seismic retrofit of 8-storey RC Hotel building in the Mexican Pacific”, paper ID 1480, organized by Chilean Society of Seis-

mology and Anti-seismic Engineering, Valdivia, April 3-5.

Attendance to Fourth International Workshop on Seismic Performance of Non-Structural Elements, co-organized by the European Centre for Training and Research in Earthquake Engineering (EUCENTRE), the School for Advanced Studies IUSS Pavia y SPONSE Association, May 22-23, Pavia.

Lecturer in Seminar "Innovative Applications of Technologies for the Seismic Protection of Structures", Universidad Adolfo Ibanez, June 19, 2019.

Lecturer in Seminar on "Seismic Design Criteria for Bridge Structures", co-organized by KIZUNA and Academy of Public Work Chile Government, July 31, 2019.

Keynote speaker VI International Conference on Investigation for Innovation and Science, Organized by Universidad Laica Vicente Rocafuerte de Guayaquil, 2-4 October 2019.

Publications

Retamales, R. (1999). "Efecto de Uso de Disipadores de Energía en un Edificio Industrial", Memoria para optar al título de Ingeniero Civil, Universidad de Chile, 225 págs., Abril 1999.

Sarrazín, M., Moroni, M.O. and Retamales, R. (2000). "Seismic Behavior of Industrial Facilities with Energy Dissipators", in Proceedings of the 12th World Conference on Earthquake Engineering, New Zealand, Febrero 2000.

Boroschek, R., Retamales, R., Saragoni, R., Kausel, E., Verdugo, R., Rebolledo, S., Araneda, M., Aguila, V., Diaz, H., Farias, J., Mata, P., Munoz, E., Poblete, R., Sanchez, M., Valenzuela, J., (2000). "Bases Metodológicas para la Evaluación de Vulnerabilidad Sísmica de Edificaciones Estructuradas con Pórticos de Hormigón Armado, Evaluación de Elementos Arquitectónicos y Evaluación de Equipamiento", publicación electrónica:

<http://desastres.usac.edu.gt/documentos/pdf/spa/doc14006/doc14006.htm>, Octubre 2000.

Boroschek, R. y Retamales, R. (2001). "Informe Preliminar: Daños Observados en Los Hospitales de la Red Asistencial de Salud de El Salvador en el Terremoto del 13 de Enero de 2001", Reporte elaborado para Organización Panamericana de la Salud, publicación electrónica: <http://www.crid.or.cr/digitalizacion/pdf/spa/doc14004/doc14004.htm>, Enero de 2001.

Boroschek, R. and Retamales, R. (2002). "Base Isolation in Hospitals", In Proceedings of Seminar on the Design of Health Facilities to Resist Natural Hazards, Electronic version: http://www.boroschek.cl/Borschek_archivos/barbados_rb_aislacion.PDF, Barbados, September 2002.

Boroschek, R. and Retamales, R. (2003). "Guías para la Reducción de Vulnerabilidad en el Diseño de Nuevos Establecimientos de Salud", World Bank, ProVentium Consortium & World Health Organization, website: <http://www.paho.org/spanish/dd/Ped/vulnerabilidad.htm>, Spanish versión (10,000 copies), Febrero 2003.

Boroschek, R. and Retamales, R. (2004). "Guidelines for Disaster Mitigation in the Design of New Health Facilities", World Bank, ProVentium Consortium & World Health Organization, website: <http://www.paho.org/English/dd/PED/VulnerabilityReduction.pdf>, English version (5,000 copies), June 2004.

- Mosqueda, G., Retamales, R., Filiatrault, A., and Reinhorn, A.M. (2005). "Seismic Behavior of Nonstructural Partition Walls Subjected to Full-scale Floor Motions". 2005 Asian-Pacific Network of Centers for Earthquake Engineering Research (ANCER) Annual Meeting, November 10-13, 2005, Jeju, Korea.
- Retamales, R., Mosqueda, G., Filiatrault, A., and Reinhorn, A.M. (2006). "Experimental Study on the Seismic Behavior of Nonstructural Components Subjected to Full-scale Floor Motions". 8th US National Conference on Earthquake Engineering, Paper No 1359, April 2006, San Francisco.
- Mosqueda, G., Retamales, R., Filiatrault, A., and Reinhorn, A.M. (2006). "Experimental Seismic Fragility of Nonstructural Components using Full-scale Floor Excitations", in 17th Analysis and Computation Specialty Conference – Charney, F., Grieson, D., and Hoit M. (eds) / 2006 ASCE Structures Congress, May 18-21, 2006, St-Louis, MS
- Mosqueda, G., Retamales, R., Keller, D. Filiatrault, A., and Reinhorn, A.M. (2006). "Experimental Evaluation of Nonstructural Components under Full-scale Floor Motions". 4th International Conference on Earthquake Engineering, Paper No 301, October 2006, Taipei, Taiwan.
- Cimellaro, G. P., and Retamales, R. (2007). "Optimal Softening and Damping Design for Buildings", in Journal of Structural Control and Health Monitoring, 14(6), 831-857.
- Retamales, R., Mosqueda, G., Filiatrault, A., Reinhorn, A. (2008), "Experimental Evaluation of Nonstructural Components under Full Scale Floor Motions", in Proceeding of the 14th World Conference on Earthquake Engineering, Paper ID 12-01-0175, Octubre 12-17, 2008, Beijing, China.
- Retamales, R., Mosqueda, G., Filiatrault, A. and A. Reinhorn (2008). "New Experimental Capabilities and Loading Protocols for Seismic Qualification and Fragility Assessment of Nonstructural Systems", Report MCEER-08-0026, R11/24/08 (PB2009-110485).
- Mosqueda, G., Retamales, R., Filiatrault, A., and Reinhorn, A.M. (2009), "Testing Facility for Experimental Evaluation of Nonstructural Components under Full-scale Floor Motions", in Journal of The Structural Design of Tall Buildings, Wiley, 18(4), 387-404.
- Retamales, R., Davies, R., Mosqueda, G., and Filiatrault, A. (2009). NEESR Nonstructural Grand Challenge Project: Simulation of the Seismic Performance of Nonstructural Systems. Experimental Phase 1: Seismic Performance of Partition Wall Subsystems, in Proceedings 7th NEES Annual Meeting, June 23–25, 2009, Honolulu, Hawaii.
- Mosqueda, G., Filiatrault, A., Reinhorn, A.M., and Retamales, R. (2010). "Full-scale Experimental Facility and Loading Protocol for Seismic Performance Assessment of Nonstructural Systems", Proceedings of 2010 ASCE/SEI Structures Congress, May 12-15, 2010, Orlando, FL, 2621-2633.
- Davies, R., Retamales, R., Mosqueda, G., and Filiatrault, A. (2010). "Effects of Nonstructural Partition Walls on the Seismic Performance of a Medical Facility", in Proceedings of the 9th US National/10th Canadian Conference on Earthquake Engineering, 25-29 Julio, 2010, Toronto, Canada.
- Retamales, R., Davies, R., Mosqueda, G., and Filiatrault, A. (2010). "Experimental Seismic Fragility Assessment of Light Gauge Steel Studded Gypsum Partition Walls", in Proceedings of the 9th US National/10th Canadian Conference on Earthquake Engineering, 25-29 Julio, 2010, Toronto, Canada.

- Boroschek, R., Bonelli, P., Restrepo, J., Retamales, R. and V. Contreras (2011). "Lessons from the 2010 Chile earthquake for performance based design and code development", BLED4. Performance Based Seismic Engineering – Vision for an Earthquake Resilient Society. Bled, Slovenia, 24 – 27 Junio 2011.
- Retamales, R., Mosqueda, G., Filiatrault, A., and Reinhorn, A.M. (2011). "Testing Protocol for Experimental Seismic Qualification of Distributed Nonstructural Systems", in Earthquake Spectra 27, pp835.
- Miranda, E., Mosqueda, G., Retamales, R., Peckan, G. (2012). "Performance of Nonstructural Components during the February 27, 2010 Chile Earthquake", in Earthquake Spectra 28, pp. S453-S471.
- Retamales, R., Bonelli, P., Boroschek, R. y J.F. Carvallo (2012). "Aplicación de Sistemas de Aislación Sísmica en Edificaciones de Mediana Altura", en Primer Congreso de Proyectos de Ingeniería Estructural", organizado por Asociación de Ingenieros Civiles Estructurales, Santiago de Chile, 17 de Mayo de 2012.
- Boroschek, R., Retamales, R., and A. Aguilar (2012). "Seismic Response of Isolated Structures Subjected to Mw 8.8 Chile Earthquake of February 27, 2010", in Proceedings of the International Symposium for CISMID 25th Anniversary: Technological Advances and Learned Lessons from Last Great Earthquakes and Tsunamis in the World, Paper No. M-2, August 17-18, Lima, Peru.
- Davies, R., Retamales, R., Mosqueda, G., Filiatrault, A., and D. Allen (2012). "Effects of Cold-Formed Steel Framed Gypsum Partition Walls on the Seismic Response of a Medical Facility", 21st International Specialty Conference on Cold-Formed Steel Structures 2012, October 24-25, 2012, St. Louis, Missouri.
- Retamales, R., Bonelli, P. y R. Boroschek (2013). "Aplicación del Concepto de 'Manzana Aislada' a la Aislación Sísmica del Condominio Copiapó Sunset", en Revista de Proyectos Asociación de Ingenieros Civiles Estructurales AICE, Santiago, Chile.
- Retamales, R., Davies, R., Mosqueda, G., and Filiatrault, A. (2013). "Experimental Seismic Fragility of Cold-Formed Steel Framed Gypsum Partition Walls", in Journal of Structural Engineering of the American Society of Civil Engineering, Vol. 139, N° 8, pp 1285-1293.
- Boroschek, R., Contreras, V., Lafontaine, M., Lagos, R. y R. Retamales (2013). "Aislación Sísmica Edificio Ñuñoa Capital", en Revista de Proyectos Asociación de Ingenieros Civiles Estructurales AICE, Santiago, Chile.
- Lagos, R., Boroschek, R., Retamales, R., and M. Lafontaine (2013). "Seismic Base Isolation of the Nunoa Capital Building, the Tallest Base Isolated Residential Building in the Americas", in Proceedings of the 13th World Conference on Seismic Isolation, Paper No. 160, September 24-27, Sendai, Japan.
- Sarrazín, M., Almazán, J.L., Guendelman, T., Moroni, M.O., y R. Retamales (2013). "Sistemas de Protección Sísmica Mediante Aislación Basal y Disipación de Energía", Capítulo en libro: "Innovación Basada en el Conocimiento Científico", Santelices, B., Lund, F., Cooper T., y J. Asenjo Editores, Academia Chilena de Ciencias, Santiago de Chile, 2013
- Retamales, R. and R. Boroschek (2014). "State-of-the-Art of Seismic Isolation and Energy Dissipation Applications in Chile", in Journal of The Japan Society of Seismic Isolation, May 2014.

- Lagos, R., Boroschek, R., Retamales, R., and M. Lafontaine (2014). "Seismic Isolation of the Nunoa Capital Building, the Tallest Base Isolated Residential Building in the Americas", in Proceedings of the 10th U.S. National Conference on Earthquake Engineering, July 21-25, Anchorage, Alaska.
- Lagos, R., Boroschek, R., Retamales, R., and M. Lafontaine (2014). "Seismic Base Isolation of the Nunoa Capital Building", in Proceedings of the 2014 CTBUH Conference, September 16-19, Shanghai.
- Boroschek, R., Bonelli, P., Restrepo, J., Retamales, R. and V. Contreras (2014). "Chapter 11: Lessons from the 2010 Chile earthquake for performance based design and code development". Capítulo en libro: "Performance-Based Seismic Engineering: Vision for an Earthquake Resilient Society", Series: Geotechnical, Geological and Earthquake Engineering, Fischinger Matej (Ed.), Vol. 32, 2014, ISBN 978-94-017-8874-8.
- Toledo, F. and R. Retamales (2015). "Análisis de Vulnerabilidad Sísmica de Estructuras con Aislación Sísmica Detalladas como Marcos Especiales e Intermedios", in Proceedings XI Congreso Chileno de Sismología e Ingeniería Sísmica, Santiago de Chile, 18 al 20 de Marzo de 2015.
- Retamales R., Bonelli, P., Boroschek, R. and J. Carvallo (2015). "Aplicación de Sistemas de Aislación Sísmica en Edificaciones de Mediana Altura", in Proceedings XI Congreso Chileno de Sismología e Ingeniería Sísmica, Santiago de Chile, 18 al 20 de Marzo de 2015.
- Retamales R., Boroschek, R., Contreras, V., Lagos, R., and M. Lafontaine (2015). "Aislación Sísmica Edificio Ñuñoa Capital", in Proceedings XI Congreso Chileno de Sismología e Ingeniería Sísmica, Santiago de Chile, 18 al 20 de Marzo de 2015.
- Lafontaine, M., Lagos, R., Boroschek, R., Retamales, R., Friskel, K., and A. Kasalanati (2017). "Seismic Isolation of the Nunoa Capital Building, the Tallest Base Isolated Building in the Americas", in Proceedings of 16th World Conference on Earthquake Engineering, Santiago de Chile, January 9-16, 2017.
- Aiken, I., Jones, L., Black, C., Whittaker, D., Retamales, R., and R. Boroschek (2017). "An Improved Design Methodology for Seismic Isolation Systems Using Nonlinear Response Spectra", in Proceedings of 16th World Conference on Earthquake Engineering, Santiago de Chile, January 9-16, 2017.
- De la Llera, J.C., Boroschek, R., Vial, I., and R. Retamales (2017). "Seismic Protection in Chile: 25 years of evolution", in Newsletter N°4 for 16th World Conference on Earthquake Engineering, Santiago de Chile, January 9-16, 2017.
- Retamales, R., Brunet, M., and F. Toledo (2017). "Technical Recommendations to Minimize Seismic Effects on Water and Gas Supply", Procobre Chile, Copper Alliance (in Spanish).
- Bonelli, P., Carvallo, J., Delporte, C., Holmberg, A., Kúpfer, M., Lafontaine, M., Lagos, R., Leiva, G., Lüders, C., Massone, L., Retamales, R., Rojas, F. and F. Yáñez (2017). "Performance based seismic design: An alternative procedure for analysis and design of buildings", Chilean Association for Seismology and Earthquake Engineering, November 2017.
- Ruiz, F. y R. Retamales (2019). "Optimización Mediante Algoritmos Genéticos del Desempeño Sísmico de Equipos Eléctricos y Mecánicos Mediante la Incorporación de Disipadores de Energía de Anillos Friccionales", paper ID: 1594, in Proceedings XII Congreso Chileno de Sismología e Ingeniería Sísmica, Valdivia, 3 al 5 de abril de 2019.

Gómez, G. y R. Retamales (2019). "Metodología Alternativa para Diseño de Sistemas de Aislación Sísmica Basado en Optimización de Desempeño Sísmico", in Proceedings XII Congreso Chileno de Sismología e Ingeniería Sísmica, Valdivia, 3 al 5 de abril de 2019.

Awards

1997	Outstanding Student, School of Engineering, University of Chile.
1998	Outstanding Student, School of Engineering, University of Chile.
2000	"Roberto Ovalle Aguirre" Award, Institute of Engineers of Chile, for the contribution of his degree thesis to the development of the national industry.
2003	University of Chile Civil Engineering Student Association recognition for his notable academic work.
2005-2008	Graduate Student Research Fellowship. Department of Structural and Environmental Engineering, State University of New York at Buffalo.

Affiliations

- Earthquake Engineering Research Institute (EERI)
- American Institute of Steel Construction (AISC)
- College of Engineers Chile A.G.
- Civil Structural Engineers Association (AICE)
- International Association for the Seismic Performance of Non-Structural Elements (SPONSE)

Others

- Advanced knowledge of structural design codes, such as: ACI318-2002, AISC-LRFD (1999), FEMA-356 (FEMA-273), ATC-40, IBC2000 and AASHTO-96 and other considered on the seismic design of structures.
- Advanced knowledge of structural analysis programs such as OPENSEES, SAP2000NL, ETABSNL, RUAUMOKO, RISA2D and RISA3D, and basic knowledge of others such as PERFORM and STAAD.
- Advanced knowledge of MATLAB, MATHCAD, AutoCad, Microsoft Project, Turbo Pascal, Basic, Microsoft Office, and Windows operative system.
- Basic knowledge of programming in VISUAL BASIC and C++.
- Advanced written and spoken English.

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Santiago de Chile, October 2019