



Charles Pankow Foundation
2025 Annual Report

YOU

***STILL* BELONG HERE**

Advancing Innovation Collaboratively

The Charles Pankow Foundation combines a rich heritage with focused leadership to catalyze and drive sustainable programs for innovation. A private and independent public benefit foundation, the Charles Pankow Foundation serves a unique role in the architecture, engineering, and construction industry. The Foundation provides leadership and catalytic funding to support game-changing research and industry collaborations to transform the industry.




President's Letter

As we begin another new year, I am reminded that we are also beginning the second quadrant of the 21st century. For anyone who remembers the fanfare, and anxiety, over approaching the new millennium, it's hard to believe the first quarter is now history. A history that mirrors, almost identically, that of the Charles Pankow Foundation. This brief message could not begin to note the lessons learned and legions of individuals whose dedication got us to this point. Suffice to say that the financial resources, depth of committed industry partnerships, relationships with premier research universities, and importantly, the Foundations board and executive leadership, is simply remarkable. As our new introductory video states beautifully, the Foundation's desire to ***Make Things Happen*** that result in impactful industry ***Change***, has never been at a higher level.

Recent evidence of the Foundation's remarkable progress is evidenced by our current carbon reduction research, the *CURE*, initiative. This work is intended to support changes to US code provisions in the United States but now, and for the first time, also in China and the UK. Added to this widening global involvement are new Federal agency co-funding partners, specifically the Department of Energy and FEMA.

It is with deep gratitude that I say thank you to all the idea generators, passionate believers, collaborator and providers of in-kind and financial assistance who have gotten is to this milestone.



Richard M. Kunnath, P.E.
Board President
Charles Pankow Foundation





Research Grants Awarded in 2025 [6]

RG A #01-25 [AWARDED]

Fast Floor: Behavior of Modular Steel Plate Floor Assemblies (Phase 3)

Jerome F. Hajjar, Ph.D., P.E., et al.
Northeastern University

RG A #02-25 [AWARDED]

Advancing Building Code Requirements for Resilient Design for Functional Recovery

Curt Haselton, Ph.D., et al.
California State University - Chico

RG A #03-25 [AWARDED]

CURE - Code Updates for Reduction of Embodied-carbon

Abbie Liel, Ph.D., et al.
University Colorado Boulder, Liel)

RG A #04-25 [AWARDED]

Design Management Course Update

Bryan Franz, Ph.D.
University of Florida

RG A #05-25 [AWARDED]

Prestandard for Performance-Based Design for Flood

Bill Coulhane
American Society of Civil Engineers

RG A #06-25 [AWARDED]

Assessment of Connection Capacity in support of Performance Based Wind Design

Seymour Spence, Ph.D., et.al.
University of Michigan

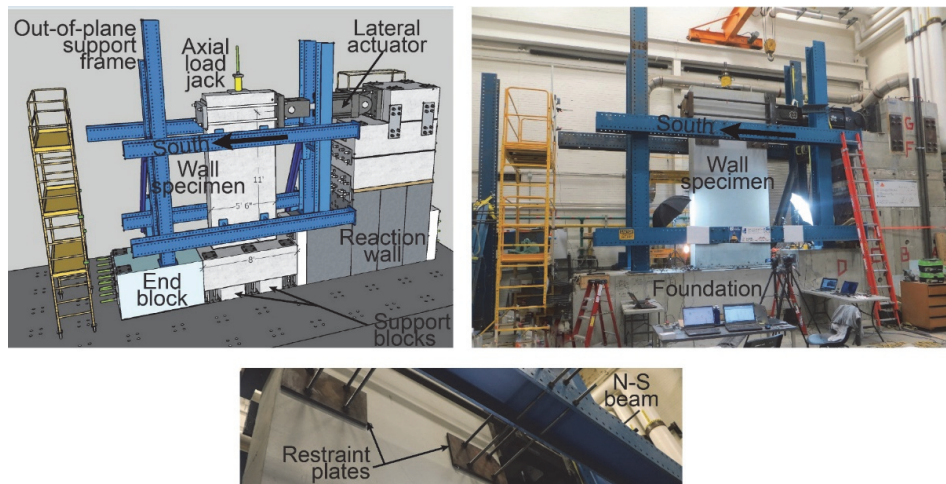
Research Grants Completed in 2025 [4]

RGA #03-19 [COMPLETED]

Seismic Precast Concrete Wall and Frame Structures with Short-Gouted Ductile Rebar Connections

Yahya (Gino) Kurama, Ph.D., P.E.
University of Notre Dame

Overview: The construction of precast concrete wall and frame systems in high seismic zones is currently complex, this making this otherwise popular structural system, rarely used in these regions. This complexity is a result of the currently mandated attachment methodology between the precast component and their foundation. This research is intended to validate that there are alternate attachment methods that are equally safe and effective but simultaneously efficient to install and at a much lower cost; specifically short-gouted rebar connectors utilizing generic grout and corrugated steel ducts.



Industry Need: Structural Precast concrete wall and frame systems are a popular way to build in many parts of the country. Unfortunately, and despite their many favorable features, they are seldom used in places subject to potential earthquakes, like California. The building codes controlling how these systems are built requires a type of connection from the precast wall (or frame component) to their foundation that is both complicated and expensive. This research demonstrated that there are other ways of connecting to the foundation that is quick, less expensive and yet every bit as safe and effective as the current code requirements.

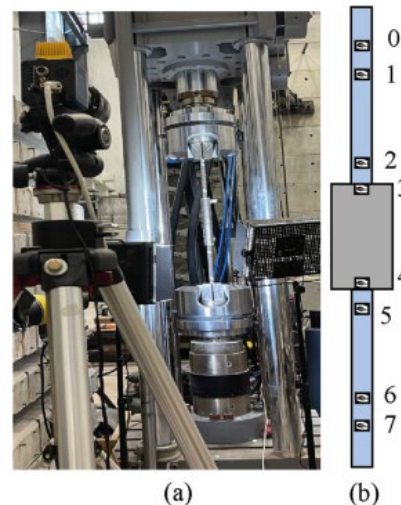
The research validated the use of short-gouted rebar connectors for precast concrete wall and frame systems. This popular and cost-effective framing method will be more widely used in California and other parts of the country subject to seismic risk thus potentially reducing schedule and cost.

RGA #03-22 [COMPLETED]

Design Requirements for Mechanically Spliced High-Strength Reinforcing Bars in Hinge Regions

Wassim M. Ghannoum, Ph.D., P.E.
University of Texas at San Antonio

Overview: Previous research over many years sponsored by the Charles Pankow Foundation has resulted in high-strength (80 and 100psi) reinforcing steel being permitted for use in most structural applications in the US. Yet, certain applications remain restricted, including the use of mechanical reinforcing bar splices in hinge regions in high-seismic zones. The hypothesis is that these restrictions are not necessary. Research needed to prove the hypothesis to the satisfaction of the governing code bodies was developed and executed.



Industry Need: The demand for higher grade steel reinforcement, namely Grade 80 (550) and Grade 100 (690 MPa) bars, continues to grow in the United States. Higher grade bars offer benefits of reduced congestion and improved constructability in reinforced concrete construction. Similarly, mechanical splices, which use coupling devices to connect two reinforcing bars, offer constructability benefits where lap-splicing is not practical or feasible. However, due to limited test data, uncertainty remains regarding the performance of mechanical splices combined with higher grade bars, particularly in hinge regions where bars undergo repeated inelastic strain reversals. This uncertainty has prompted ACI Committee 318 to place limits on the use of mechanical splices with higher grade bars in concrete construction.



RGA #05-24 [COMPLETED]

Safe and Sustainable Parking Garage Live Loads in the Age Of the Electric Vehicle

Ross B. Corotis, Ph.D, P.E.
University of Colorado Boulder

Overview: As a result of government mandates and consumer preferences, electric vehicles are increasing as a percentage of vehicles on US roads and highways. As the weight of these vehicles is significantly higher than the traditional ICE powered vehicle, there is growing concern about the impact of this higher weight on infrastructure generally and on structured parking garages specifically. Are the current code- mandated live loads adequate for these increasing vehicle weights? If not, what changes might be needed. An important additional consideration is what is the anticipated rate of electrical vehicle adoption in the US vehicle fleet?



Industry Need: Parking garages, loaded primarily by sets of vehicles sampled from the prevailing vehicle fleet, are subject to changes in loads and demand as vehicle purchasing preferences of the market shift over time. As electric vehicles (EVs) continue to become more popular in the US and globally, some have questioned whether a shift to EVs, with their significant battery weight, necessitates a change in the prescribed design live load in the ASCE 7 specification. This study implements the stochastic live load method that was used to establish the existing 40 psf garage live load value in ASCE 7 but using data reflective of the current state of the US vehicle fleet. Additionally, an approach is introduced to account for future increased adoption of EVs and the presence of EV charging stations grouped together.



RGA #03-23 [COMPLETED]

Fast Floor: Behavior of Modular Steel Plate Floor Assemblies (Phase 2)

Jerome F. Hajjar, Ph.D., P.E., et al.

Northeastern University



Overview: Traditional floor framing remains a significant bottleneck for construction time in multi-story steel structures. By utilizing an innovative module consisting of two steel beams and a plate welded to the top flanges, coupled with the use of a raised access floor, FastFloor eliminates the need for cast-in-place concrete on steel deck. The research detail recent experimental testing for both gravity and in-plane loading, showing how the system maintains structural integrity under extreme loading while offering a 30-40% reduction in installation time. The project also provides results and recommendations for addressing fire, vibrations, and acoustics as well as to gain insights into the system's scalability and its potential to lower overall project financing costs through faster delivery.

Industry Need: Accelerating Construction through Modular Steel Floor Systems through the development and testing of the "FastFloor" system, designed to drastically reduce onsite labor.

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Research Grants in Progress in 2025 [8]

Performance and Repair of Ordinary Structural Walls Subjected to Wind and Seismic Loading Protocols

RGA #01-21

John W. Wallace, Ph.D., PE, F. ACI, F. ASCE
University of California, Los Angeles

Thermal Performance of Spandrel Assemblies in Glazing Systems Research (Phase 2)

RGA #01-23

Wei Lam (RDH), et al.
RDH Building Science Inc.

FEMA P695 Study on Post-tensioned Mass Timber Rocking Wall Lateral Systems

RGA #02-23

Shiling Pei, Ph.D.
Colorado School of Mines

Steel/Mass Timber Hybrid Diaphragms and Vibration

RGA #04-23

Erica Fischer, Ph.D., et al.
Oregon State University

Improving the Safety of Rebar Cages by Using Innovative Connectors (Phase 2)— Failure Prevention of Below and Above Ground Rebar Cages

RGA #01-24

Hamed Ebrahimian, Ph.D., P.E., et al.
University of Nevada, Reno

Guide to Equitable Risk Allocation in Design-Build Projects

RGA #02-24

Keith Molenaar, Ph.D., et al.
University of Colorado Boulder

Owner Readiness Assessment Tool for Design-Build Projects

RGA #03-24

Carrie Sturts Dossick, Ph.D., P.E.
University of Washington

RGA #04-24

Bryan Franz, Ph.D.
University of Florida



Funding Partners

AIA Building Performance Knowledge Community (AIA-BPKC)

American Concrete Institute Foundation (ACIF)

American Council of Engineering Companies (ACEC)

American Institute of Steel Construction (AISC)

American Society of Civil Engineers (ASCE)

ARUP

Atlas Tube

Cives Steel

Clark Construction

ClimateWorks

Concrete Reinforcing Steel Institute (CRSI)

Concrete Reinforcing Steel Institute Foundation (CRSIF)

Construction Industry Institute (CII)

Design-Build Institute of America (DBIA)

Desimone

DCI Engineers

Gerdau

Glass Coatings and Concepts (GCC)

Haskell Construction

Hensel Phelps

Herrick Steel

Holmes Structural & Fire Engineering

HMC Architects

International Association of Foundation Drilling (ADSC-IAFD)

International Institute of Building Enclosure Consultants (IIBEC)

Jones Design Studio

Kiewit



Funding Partners (continued)

KL&A Engineers and Builders

KPFF Consulting Engineers

Lease Crutcher Lewis

Maffei Engineering

Magnusson Klemencic Associates Foundation (MKAF)

Martin / Martin

Metals Fabrication

National Glass Association

NUCOR

Pankow Builders

Parking Consultants Council (PCC)

Parsons

Pliteq

Process Industry Practices (PIP)

Rimkus

Schuff Steel

Siefert Associates

Simpson Gumpertz & Heger (SGH)

SOCOTEC

Softwood Lumber Board

Structural Engineering Association of New York (SEAoNY)

Steel Dynamics

StructureCraft

TimberLab

Vanir

Walter P. Moore

Wiss, Janney, Elstner Associates (WJE)



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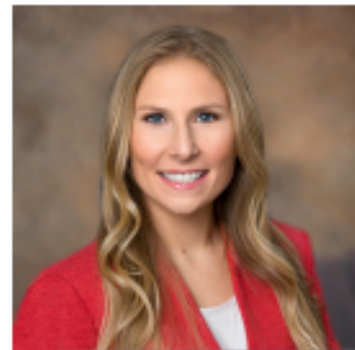
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Happy Holidays 2025!

