American Iron and Steel Institute

News Release

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AISI STANDARDS COUNCIL SMALL PROJECT FELLOWSHIP PROGRAM ANNOUNCES WINNING RESEARCH PROPOSALS FOR 2018

WASHINGTON, D.C. – The American Iron and Steel Institute (AISI) Standards Council has selected five winning research proposals for its 2018 Small Project Fellowship Program. Launched in 2014, AISI's Small Project Fellowship Program identifies and provides funding for research projects that will significantly impact the reliability, performance, and cost-competitiveness of cold-formed steel (CFS) framing products in a variety of end-use applications.

The Small Project Fellowship Program provides a streamlined mechanism for AISI's standards development committees (the Committee on Specifications and the Committee on Framing Standards), industry stakeholders, academics and students to collaborate on relatively short-term, highly focused, and mutually beneficial projects. Project selections are based on several factors, including the potential for long-term impact on the industry; steel industry engagement and co-funding; and results for the AISI standards development committees, the student, and the academic institution.

The winning research proposals and academic institutions for 2018 are:

- **"Thermal Bridging in Cold-Formed Steel Structures" – University of Massachusetts Amherst.** This project will survey existing structures to determine the magnitude of the energy loss in common cold-formed steel structural/cladding systems, and model these systems and perform parametric analysis via three-dimensional heat transfer software. It will provide a better understanding of the role of thermal bridges in the total energy use of a typical cold-formed steel-framed building. The findings will have potential to provide the

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fundamental research to begin to propose effective mitigation strategies for cold-formed steel structural and cladding systems.

- **"Investigation on Bolted Connections in Cold-Formed Steel Members Using 1429 SAE Bolts" - University of North Texas.** This project will collect literature on the testing and analysis of 1429 SAE bolts with a focus on connection tests and material tests, create a test database for 1428 SAE bolts from the literature, and analyze the differences between SAE and ASTM bolts with a focus on material properties, dimensions, and quality assurance and inspection requirements. This project has the potential to establish a foundation for the future development of SAE bolted connection provisions to be included in AISI S100, *North American Specification for the Design of Cold-Formed Steel Structural Members.*

- **"Connector Shear Capacity Limited by Edge Distance in Cold-Formed Steel Design" – Cold-Formed Steel Research Consortium.** This project will explore connector shear capacity limited by the edge distance in cold-formed steel design and evaluate capacities provided in AISI S100. The connectors studied will include welds, bolts, screws, and powder-actuated fasteners (PAFs) as defined in AISI S100. This project has the potential to provide more optimized design outcomes for the fasteners near edges in cold-formed steel design.

- **"Review of AISI S100 Provisions for Screw Connections in Shear and Tension" – University of Florida.** This project will review existing provisions for screw connections in AISI S100 for loading in shear and tension, but not combined actions. If the predicted strengths for tension and shear limit states for screw connections can be more accurately predicted, this project will have the potential to provide savings in the form of lower factors of safety while increasing reliability, which will lead to more cost-effective and safer construction. The primary impact will be on steel roof deck and steel roof and wall panels, which usually are fastened using screws.

- **"Inelastic Lateral-Torsional Buckling Strength Validation for Non-Principal Axis Bending Using Numerical Methods" – Cold-Formed Steel Research Consortium.** This project will

identify sections and parameters to be included in analyses, perform shell finite element buckling collapse analyses, and compare results to a proposed design methodology for AISI S100. This project has the potential to improve the design provisions for common nonsymmetrical shapes such as angles and eave struts, point-symmetric sections such as purlins and girts, and non-symmetric cold-formed steel sections which are increasingly desired when optimizing cold-formed steel cross-sections for shipping, architectural envelope, thermal and acoustic demands.

"The research conducted through the Small Project Fellowship Program since 2014 has advanced our knowledge of cold-formed steel behavior and established improved design methods for a variety of cold-formed steel applications," said Jay Larson, P.E., F.ASCE, managing director of AISI's Construction Technical Program. "By combining academic and industry expertise and sharing funding with several partners, the program has engaged academia, industry and students in unique opportunities for mentoring and research while delivering results to the industry in a cost-effective and efficient manner."

AISI's Standards Council initiates cold-formed steel standards development projects and maintains accreditation by the American National Standards Institute (ANSI).

AISI's codes and standards work is conducted under the Construction Market Council of the Steel Market Development Institute (SMDI), which increases and defends the use of steel by developing innovative materials, applications and value-added solutions for customers in the automotive, construction and packaging markets. SMDI investors include: AK Steel Corporation, Algoma, ArcelorMittal, Nucor Corporation and SSAB Americas. For more information on SMDI's Construction Market program, visit www.buildusingsteel.org. Follow SMDI Construction on Twitter @BuildUsingSteel.

AISI serves as the voice of the North American steel industry in the public policy arena and advances the case for steel in the marketplace as the preferred material of choice. AISI also plays a lead role in the development and application of new steels and steelmaking technology. AISI is comprised of 21 member companies, including integrated and electric furnace steelmakers, and approximately 120 associate members who are suppliers to or customers of the steel industry. For more news about steel and its applications, view AISI's website at www.steel.org. Follow AISI on Facebook or Twitter (@AISISteel).

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