



Request for Proposal: Teaching Aid for Steel Sustainability

August 23, 2022

The American Institute of Steel Construction (AISC) is seeking proposals to develop a university-level educational presentation featuring steel's sustainable features.

Background

American structural steel is a premier green construction material. Domestic steel members are made with 93% recycled steel, keeping old cars and appliances out of landfills, and that scrap is melted into new steel using pure electricity.

Structural steel isn't just recycled but "multi-cycled," as it can be recycled over and over and over again. At the end of a building or bridge's service life, 98% of all structural steel is recycled into new steel products, with no loss of its physical properties. It is truly a cradle-to-cradle material. [aisc.org/sustainability](https://www.aisc.org/sustainability)

But a steel structure is less likely to become scrap in the first place. Steel buildings have unparalleled strength and flexibility of function over their lifetime. If occupancy or loading changes, steel frames are more readily adjusted. Architects can use steel to create structures that are graceful, nimble, and minimal in their bulk both in plan and section, with long spans creating open spaces and larger bays. Steel bridges, meanwhile, frequently have service lives that exceed 100 years and are more easily repaired and retrofitted than their counterparts in other materials.

The U.S. steel industry has high transparency through its mills' environmental product declarations (EPDs) that cover all phases from product extraction to mill gate. AISC develops environmental product declarations (EPDs) of fabricated hot-rolled structural sections, fabricated steel plates, and fabricated hollow structural sections (HSS) that cover all phases from product extraction to construction through the end of life. Life cycle analysis documents offered by other materials frequently omit the carbon released from production waste or material disposal when a structure is demolished.

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It makes financial sense for fabricators to reduce their carbon footprint by reducing electricity use, so the industry is continually upgrading to renewable sources of energy--and steel production will continue to get greener as the nation's power grid brings more renewable energy online. Specifying American steel is an easy step architects and engineers, as well as owners, can take to reduce their project's carbon footprint, and this course should equip students to make educated material choices as they build a greener future.

Objective

AISC maintains a [steel teaching aid library](#) for educators, students, and others within the academic engineering and architecture community to download and use free of charge. Educators have recently told us they'd like more useful and engaging teaching tools, including videos and real-world examples.

The objective of this project is to produce a presentation of slides, videos, or combination thereof that introduces steel sustainability and sustainable production to university-level engineering or architecture students. An educator should be able to present the content within a 50-minute class. The proposal should also include at least one activity to accompany the presentation, such as a homework assignment, guided discussion, or game.

Deliverables

The format is flexible; it could be a slide presentation accompanied by videos, case studies, one video, or a series of shorter videos. When developing the presentation, please consider whether it would be most effective in a structures, materials, sustainability, or studio course.

The project deliverables include:

- Either a slideshow presentation including clear, legible graphics that could be presented by an educator in 50 minutes, or a video or series of shorter videos totaling 50 minutes.
- One activity to accompany the presentation.
- Supplemental content for educators, such as a script or outline for a slideshow, instructions for the activity, or homework solutions.

Required Content

Regardless of format, the course should address the following topics, organized as you best see fit:

- Basic introduction to the production of domestic steel with a focus on sustainability
- Brief overview of the integration of structure and architecture and steel's flexibility with different systems and architectural functions
- Discussion of how to accurately measure a material's carbon impact, including life cycle analysis and the cradle-to-cradle concept
- Introduction to Environmental Product Declaration
- Brief review of zero-carbon energy sources and innovations for electricity generation
- Anything else you think would help students fully understand the sustainable benefits of domestically produced and fabricated structural steel

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Please either secure permission to use any included images or choose royalty-free or open-source graphics.

Instructions for Proposals

AISC will evaluate the proposals along with the AISC Partners in Education Committee and provide funding in the form of a grant, payable upon completion of the project, to a successful proposal. The teaching aid will be made available free of charge to all AISC-member educators for use in their courses, with credit to AISC and the author. All teaching aids will become the property of AISC and can be used for educational purposes through a Creative Commons license. [View a sample contract here.](#)

The proposal should include:

- List of video(s) or presentation topics, including the general content for each, the associated activity, and the intended audience. Define the course(s) in which the teaching aid would be most effective.
- Project schedule
- Budget, including any costs for travel as a separate line item
- CV including any relevant experience

AISC welcomes collaborative proposals in addition to individual submittals.

Proposals are due by October 17, 2022 by email to Jeanne Homer at homer@aisc.org. AISC will select a proposal by November 18, 2022. AISC and the Partners in Education Committee will provide a technical review of the teaching aid through 2-3 virtual meetings during the course of its development. AISC will provide any required templates.

Grant Benefits

AISC may invite the developer to present their work at a future educator session at NASCC: The Steel Conference and reimburse his/her/their travel costs. The teaching aid will be announced at an NASCC educator session and publicized in the monthly Educator Tip Sheet.

AISC can also offer a letter of support for the developer to gain additional funding from their university or other entities.

Position on Overhead Expenses

AISC is a not-for-profit association with members from across the structural steel construction community, including producers and fabricators. Because AISC does not use the teaching aids for profit and because our work is performed in the interest of public safety, grants must not be used for indirect cost and overhead expenses at educational institutions. AISC may choose to fund grants or gifts at its discretion.