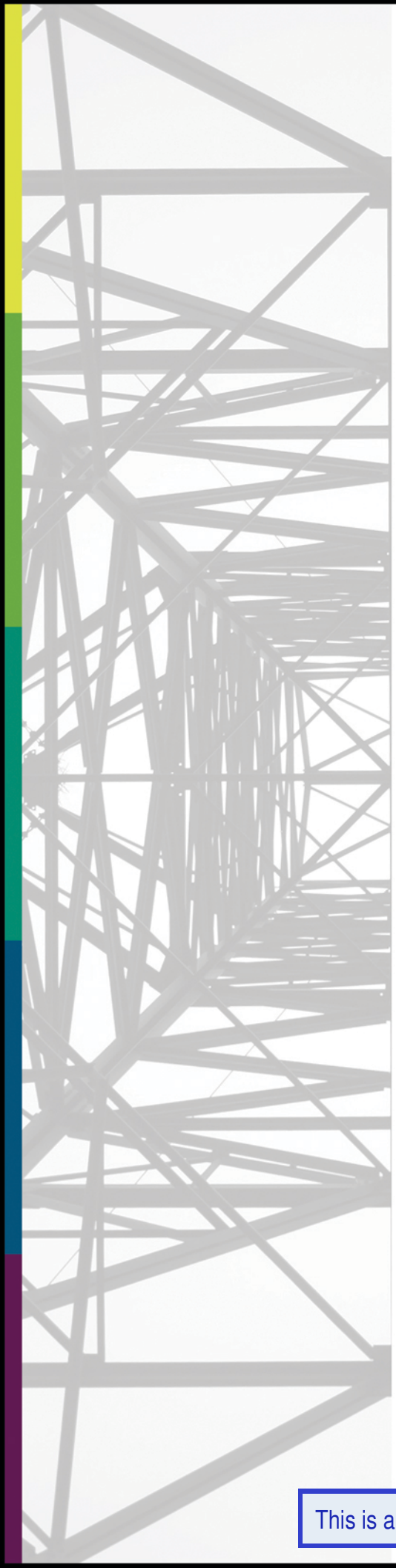

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Mapping the Future of Civil Engineering Education

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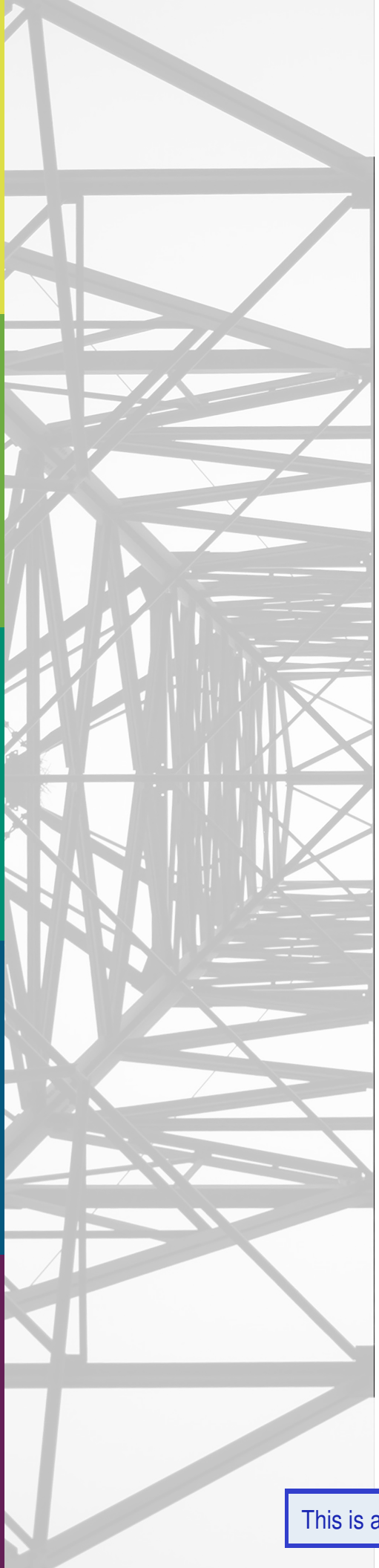

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Civil Engineering Education Summit

Mapping the Future of Civil Engineering Education

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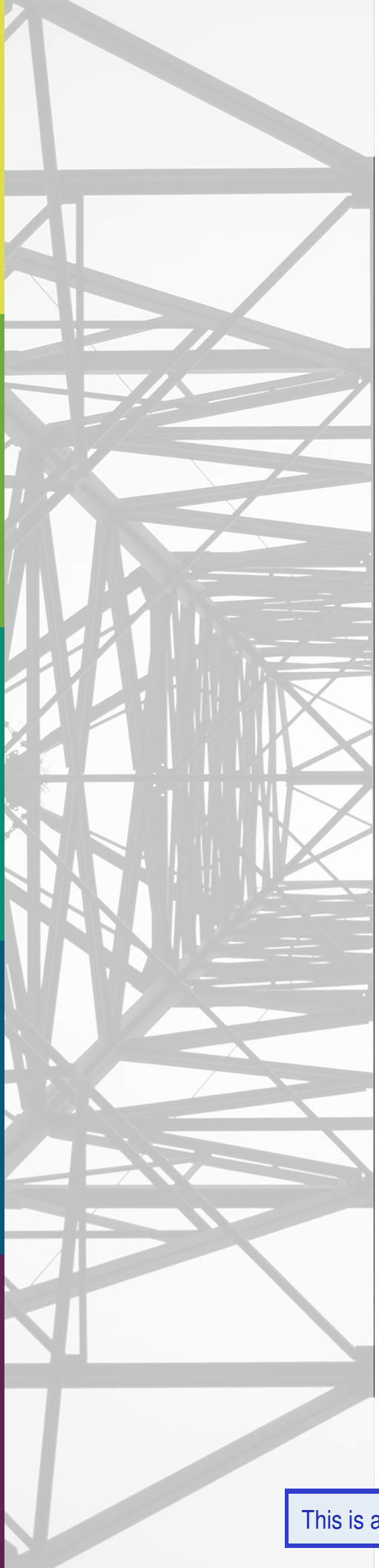

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Mapping the Future of Civil Engineering Education

May 28-30, 2019 | Dallas, Texas

Sponsored by the Committee on Education

Southern Methodist University in Dallas, Texas
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Contents

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Executive Summary

It has long been recognized that engineering education should mirror the profession itself – as a dynamic, ever-evolving field. Indeed, in its 1955 Report on Evaluation of Engineering Education, a panel sponsored by the American Society for Engineering Education (ASEE) stated:

> ***"Engineering is far from static, for it is essentially a creative profession."***

This sentiment is echoed in the Summary Report of the 1995 Civil Engineering Education Conference (ASCE):

> ***"...civil engineering education should be continually evolving to higher levels of quality and at all times incorporating new technologies and practices into the civil engineering education process."***

In keeping with these statements, the engineering profession has witnessed an acceleration of the breadth, depth, and magnitude of change – not only to the complexity of challenges engineers must address but also to the tools available to address those challenges and to the people who will address them. This accelerating pace of change necessitates revisiting our basic understanding of civil engineering education currently, and through the middle of the 21st century.

Over 200 civil engineering educators, practitioners, and guests convened at the Civil Engineering Education Summit in Dallas, Texas, in May 2019 to consider the future—our future populations, engineering challenges presented by those populations, and opportunities and challenges related to preparing civil engineers to address and meet those challenges. Participants at the 2019 Civil Engineering Education Summit considered visions of the future, examined current efforts by the profession and across universities to advance education in the context of those visions, and identified opportunities to transform the civil engineering educational experience to prepare students for the future. The theme for the Summit was "Empowered to Innovate," emphasizing the goal to provide civil engineering educators with ideas, examples, and encouragement to undertake the curricular innovation and other changes needed to meet the needs of our rapidly evolving profession, and highlighting the importance of promoting a culture of innovation within the civil engineering field.

During the first part of the Summit, participants heard from a series of experts, including ASCE President-Elect K. N. Gunalan, about the current state of the civil engineering profession ("Connecting the Future"). The second part, "Conceiving the Future," featured vision presentations from innovators who are pushing the frontiers of the profession, including Chris Luebkeman of Arup Foresight and Jerry Buckwalter of Northrop Grumman. These speakers set the stage for the participants to generate "opportunity statements" and "Big Ideas" for the profession to pursue change. Finally, participants discussed these draft Summit outputs and rank ordered the opportunity statements during the third session ("Constructing the Future").

Summit Findings

Opportunity Statements

Defining civil engineering as a people-focused profession, participants linked people/stakeholder groups with actions addressing future needs. This exercise fostered the creation of "Opportunity Statements," in the form of "(People/Group) need to (need) so that (result)."

One example is: "Students need to learn systems thinking so that they are prepared for current and future societal challenges."

Summit participants generated a total of 186 Opportunity Statements. These statements were then grouped

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