

# CHALLENGES AND INNOVATION IN CIVIL AND ENVIRONMENTAL ENGINEERING

## Bigger is Better: The Multiple Benefits of Modularization in Heavy Industrial Construction and Maintenance

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In Heavy Industrial construction, in both greenfield sites and expansions, the challenge is to utilize scarce resources in a way that will limit financial risks all the while managing the numerous safety issues to a “zero incident” goal. One solution that is growing in application is to build reactor vessels, electrostatic precipitators, large bridge spans, and other modular units in the largest manageable configurations in order to reduce the exposure to common risk elements, financial and physical. It means that being a mega-mover is becoming a part of the heavy industrial vernacular, and it is paying off. This lecture will focus on the benefits of building it big in order to reduce the overall costs, and the impact of accidents on the job site. It also requires a constantly innovative engineering force who are solution minded rather than commodity driven. This session is all about elegant solutions with high impact results. It’s what makes people want to be engineers.

*Mr. Sipe has served Barnhart for the past ten years in both Engineering and Management roles. He holds a BSME ('00) and has received graduate level training in civil/ structural studies. He received an MBA in 2009. He began in a Design/ Project Engineering role, served as the Branch Manager of the Gulf Coast Division, served as Regional Director for many Project branches and now serves as the Vice President of Human Resources, focusing his efforts on organizational development, primarily in developing key leaders for future growth. His management experience extends back 20 years in various fields of work. As a Barnhart employee, he has been involved in the design and application of all manner of customized rigging equipment, and modification of existing tools. He has extensive training in weld design and special training in the handling of quenched and tempered steels (specifically, ASTM A514). He has served as Project/Design Engineer on some of the largest projects in company history. As a branch manager and Regional Director, he was responsible for business development and operational agility. These roles have contributed to a responsibility in people development and training for key positions in the organization.*