Multidisciplinary Educational Resources
FINAL REPORT

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This project created a multidisciplinary educational resource for the students of the UMR and the greater professional community in the capabilities and use of advanced materials and sensors for civil infrastructures.

Advanced composite materials offer superior mechanical properties, long-term durability, and fabrication flexibility. Recent sensor advances offer in-situ monitoring of the health, geometric, environmental, and structural characteristics of civil engineering structures. Although it is a relatively new area in civil engineering, the importance of composite materials and integral "smart" sensors are rapidly increasing due to the improved performance and durability as compared to conventional technologies. The area addresses growing needs for strengthening and rehabilitating aging structures and for designing new structures to more stringent requirements and for longer lifetime. Advanced materials and smart structures technology encompass several engineering disciplines; hence, effective education must cross the traditional boundaries. Engineers must gain interdisciplinary knowledge and experience to effectively understand and use the new technology.

The curriculum project has several important features. The course content, instruction, and laboratory plans are interdisciplinary with significant group work and reflect the forefront of structural/materials engineering, smart structures, and educational methods. An on-campus bridge will provide students with practical experiences and industry with a long-term field demonstration. A World Wide Web resource site will provide immediate interactive access by students at UMR and elsewhere and by the greater professional community to the educational resources and demonstrations developed during this project.

Technology Transfer Activities: To assist MoDOT in the technology transfer of the revised design guidelines and possible repair techniques as the information becomes available. This may include presentation at state offices or dissemination of the report nationally.