

SERVICES

Thermal Modeling
Thermal Control Plan
Laboratory Testing

PROJECT SIZE

\$18,500,000

KEY PERSONNEL

Mark Dixon, Project Manager

REFERENCE

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Rendering of the new Third Street Bridge

(Credit: https://www.mcoho.org/government/elected_officials/engineer/third_street_bridge.php)

Tourney Consulting Group (TCG) was contracted through Eagle Bridge Company to prepare a Thermal Control Plan (TCP) for the mass concrete piers of the Third Street Bridge crossing the Miami River. The piers were of unique geometry with varying thicknesses from approximately 5-ft to 7-ft as the smallest dimension.

The TCP included thermal modeling to evaluate various strategies for controlling maximum concrete temperatures and concrete differential temperatures, which is intended to minimize cracking with respect to temperature-induced stresses. The TCP defined thermal curing and monitoring requirements for a full range of ambient and concrete temperatures expected on-site. The contractor chose to use cooling pipes in combination with concrete insulation as the method for controlling concrete temperatures post-placement. The TCP defined cooling pipe requirements and cooling pipe spacing and layout for sufficient temperature control using computer modeling techniques. TCG also performed laboratory testing of the proposed concrete mixture to determine the thermal characteristics of the specific concrete mix and materials.