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# CONCRETE

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## CONCRETE COMMUNITY SERVICE:

Helping Raptors and the Upper Cumberland Area

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## A CHEAPER ESTIMATE OF

Concrete Heat Evolution Due to Hydration

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by L. K. Crouch, Jason E. Miller, Aaron Crowley, and Alan Sparkman

# CONCRETE COMMUNITY SERVICE:

## Helping Raptors and the Upper Cumberland Area

**B**urgess Falls State Natural Area keeps two non-releasable birds of prey for wildlife education. The birds were badly in need of a new dwelling. Their previous dwelling had a crushed limestone floor which was extremely hard to clean. A less than sanitary floor could damage the birds' health in the long term (and deprive local folks of one of the more fun parts of their education). Burgess Falls Park Manager Bill Summers approached TTU Civil Engineering Concrete Materials folks and asked if we could help. Fortunately, not only do we like concrete (in the extreme) but we also know some people that can be quite helpful.

Burgess Falls Park Rangers found the birds a temporary home, demolished the current structure, and leveled the site. Mark Davis, TTU Civil Engineering Technician, took the lead on forming and grading the base for the new concrete floor for the bird enclosure. Mark was assisted by TTU Civil Engineering students Steven Salaman, Eric James and Aaron Crowley. TTU Concrete Materials folks typically research new concrete mixture designs and measure engineering properties in the laboratory for the Tennessee Department of Transportation and/or the Tennessee Concrete Association. Field placements are not part of our normal routine. Alan Sparkman, executive director of the Tennessee Concrete Association, who is very experienced with concrete field placement, was contacted. Mr. Sparkman was ideal for the job for a variety of reasons as he is a board member for Tennessee Parks and Greenways Foundation, has all the necessary tools and has long supported TTU concrete research.

The floor slab was placed on Monday, November 25, 2013, by TTU Civil Engineering Concrete Materials Graduate students Aaron Crowley and Lee Rogers under the direction of Alan Sparkman (see Figures 1 and 2). The slab was cured with plastic and straw for one week. The new slab is 25-feet in length, 11-feet wide, and 4-inches deep. The new slab is now conveniently sloped 1-inch in the 11-foot direction for easy cleaning with a garden hose. Burgess Falls Park Rangers recycled many of the components from the previous enclosure to construct the new enclosure economically and quickly (see Figures 3 through 6). Thanks to the "The Friends of Burgess Falls" for volunteering time to paint (see Figure 7).

### AUTHORS

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Figure 1. Placement: from left Mark Davis, Aaron Crowley, Alan Sparkman, Lee Rogers, L. K. Crouch, Jason E. Miller



Figure 2. Finished Slab



Figure 3. Frame Construction



Figure 6. Nearly Completed Raptor Shelter



Figure 4. Further Frame Construction



Figure 7. Burgess Falls State Natural Area Raptor Shelter with Construction Crew: Bill Summers, Mark Davis, Aaron Crowley, L. K. Crouch, Lucy Caruthers, Jason E. Miller, Heather Ferrell, Alan Sparkman, Erin Strouss, and Nat Garrison (not pictured Lee Rogers)



Figure 5. Sheathing Installation