Overview
On April 5th, 2008 the American Society of Civil Engineers (ASCE) held the Ohio Valley Student Conference (OVSC) at Youngstown State University. One of the competitions held at this conference was a Concrete Horseshoe Competition. The horseshoe competition was to be a single elimination event in which schools from Kentucky, Ohio, & Pennsylvania would battle in the sandpits for glory. The following are the exploits of the Geneva College "Golden Tornado" Concrete horseshoe team.

Product Research
After forming a team that would attend the 2008 ASCE OVSC and deciding that Geneva College would participate in the concrete horseshoe competition, the team set about finding a means to achieve a material that would sustain the forces that would be prevalent in such an event. Deciding to compete in the event just weeks before the competition, the team realized that the use of ordinary cementious material was out of question and therefore began the search for an alternative material that would be able to attain a high strength quickly. The team's quest ended in locating a study done by an employee of the U.S. Air force's Materials Command about a fast curing product created by Ceratech, Inc. The team contacted the company, who was more than happy to supply all the materials necessary for the creation of the horseshoes.

Molding
Days before the event, the team fabricated a wooden mold to hold the shoes during curing and two days before the event, at approximately 11:30pm on Thursday April 3, the team took to the lab to mix containers of PAVEMEND 5.0 and PAVEMEND VR. After failing to mix the PAVEMEND 5.0 properly, the team molded the PAVEMEND VR to the desired shape and left the shoes to cure until the following day when they were removed and stored until the morning of the competition.

Relentlessly Trying to Remove Excess PAVEMEND 5.0 from the Molds.

Finished Horseshoes Containing PAVEMEND VR

Eminent Failure

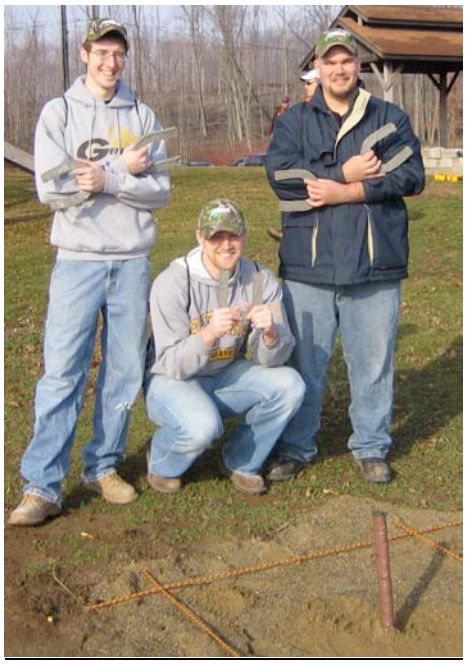
On the following evening the team tried again to mix the PAVEMEND 5.0 but the material formed up so quickly, that the team could not even remove any of it from the bucket. After the failed mixing of the PAVEMEND 5.0, the team tested some of the shoes fabricated with the PAVEMEND VR material and found that they broke on impact. Noting this, the team then went on to mix PAVEMEND VR, this time adding some FORTA FERRO fiber to the mixture and molded them in the same manner as the previous night.

PAVEMEND 5.0 Bucket Paper Weight

Mixing PAVEMEND VR

A Rough Touch

The next morning tensions were high as four out of the six horseshoes broke when being cut from the forms. The team then gathered three of the originally cast shoes from Thursday night, as well as the two which were cast the night before and began the journey to the competition.



Golden Tornado Concrete Horseshoe Team
From Right to Left; Joe Reed (Captain), Brandon Fombelle, Josh Kinnear

Competition
The first round of competition brought the Golden Tornado Concrete Horseshoe Team to face the University of Western Kentucky. Thrown by Josh Kinnear, the round went to double overtime until the University of Kentucky scored a final point and won the round 1-2. Given that the competition was a single elimination event, the team's spirits fell as they sauntered off of the field.

A New Hope
Moments after losing the first round, the team was informed by the judges that the competition's rules were going to be changed and that it would now be a double elimination tournament. Facing Stark State Institute of Technology, the Golden Tornadoes started the second round of play with only one horseshoe remaining and a rejuvenated sense of hope. Thrown by Joe Reed the second round proved to be quite a time of anxiety with each toss of the shoe being let go apprehensively, knowing that each flight could be its last. However, much to the surprise of the team, as well as those around, the thirty- four hour old shoe held together for all eight pitches. Breaking on the last pitch of the round, the Tornadoes won the round with a final score of 4-1.

Final Showdown
Taken aback by their sudden success and disappointed that they were out of shoes; the Tornadoes met their final opponents, University of Kentucky, in the championship round of the loser's bracket. Thrown by Joe Reed, using horseshoes on loan from Stark State Institute of Technology, the Tornadoes went on to win a 4-2 victory to grasp third place in the tournament.

Closing Remarks
Overall the team was very impressed with Ceratech Inc.'s PAVEMEND VR product. The product proved to be very easy to work with, and arguably performed better than all but one other team's mixture. It is also important to note that the PAVEMEND VR material would have increased strength if more time had been allowed, but with the time constraints placed on their curing, the shoes still performed magnificently. Unfortunately the team did not get the chance to

use Ceratech's PAVEMEND 5.0 but it can be surmised, from its strength upon setup, that the product would have performed better than PAVEMEND VR.

The team would like to thank Ceratech Inc, Home Depot, & Forta Inc for their generosity in supplying materials to the team. Without their help this endeavor would have been impossible.