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What an exciting time for your Tennessee Concrete Association! And what a privilege for me and the rest of your TCA Board of Directors to be leading our association as we look toward a dynamic future.

We recognize that privilege brings responsibility, and we take that responsibility very seriously. Our recent Board meeting in Destin had 100 percent attendance and 100 percent participation. It was a time of celebration to be sure – we were able to look back on the efforts of more than three years of what often seemed an endless process that culminated on June 13 with the successful sale of TCA’s Fort Negley campus. Thanks to previous TCA Boards that had the courage and foresight to purchase this property more than a decade ago, TCA was able to capture the tangible benefit of Nashville’s dramatic growth through the sale of our property.

And thanks to the work and planning of our current Board, we already had a new location under contract and were able to close on that transaction the following week (June 19). Our new home is located about a mile east of I-24 at 12872 Old Hickory Boulevard in the Cane Ridge/Antioch community. The new location puts us in closer proximity to the CIM program at MTSU, and right next door to Cane Ridge High School and their concrete technology concentration for high school students. With 4.98 acres we have room to grow and expanded opportunities to show off all the cool things that concrete can accomplish.

Let me assure our entire membership that your Board is committed to being good stewards as your association relocates and as we construct a new home for TCA. The Board has created a Building Committee to oversee this process and they will be working closely with our Executive Director (Alan Sparkman) throughout the planning, design and construction process. All of our work is at the very early stage as I write this, but look for more information and updates as we move forward with the creation of new home for our Tennessee concrete industry.

—Tim Costo
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Tim.Langelier@LaFargeHolcim.com
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What if every single act of design and construction made the world a better place?

Achieving this high standard will not be easy — but we want to demonstrate that concrete can be used to build at the very highest levels of sustainable construction. This quest to use concrete to make our world a better place hits every pillar of TCA’s mission statement: Learn, Expand, Accelerate, Demonstrate. Our team will be learning what is needed to meet the rigorous standards imposed by the LBC and we will be sharing what we learn with the rest of the concrete industry, not just in Tennessee but across the US. What we learn will help us expand concrete’s presence across the entire sustainable construction market while lowering our industry’s environmental impacts. TCA’s project will serve as a learning laboratory so that what we learn can help accelerate adoption of concrete building methods in larger projects and allow our industry to contribute in a meaningful way to accelerated adoption of structures that are resilient, efficient, economical and attractive.

Finally, in a very tangible, touchable, practical way we will demonstrate our learning by creating a campus that turns the “What if” question posed by the LBC into a “Here’s How It’s Done.”

TCA’s current campus demonstrates what a powerful statement our members can make when they work together, and we intend to apply this learning to the development of our new home. If you or your organization would like to partner with TCA as we create our new showcase I encourage you to reach out and get your ideas on the table. Reach me at: asparkman@tnconcrete.org.

Let’s go make the world a better place!

— Alan Sparkman

Executive Director
SERIES OVERVIEW
This four-part series of papers report the findings of an ongoing investigation into Tennessee Department of Transportation (TDOT) Class D concrete specifications (1) to increase surface resistivity (SR). The investigation explores both exceeding limitations on currently approved TDOT supplementary cementing materials (SCMs) and using SCMs not currently approved by TDOT. All concrete mixtures used in the investigation met TDOT’s Class D concrete plastic and hardened property requirements (1). Further, all concrete mixtures used in the investigation were constrained to meet the following criteria:

- Water-cementing materials-ratio (w/cm) = 0.37
- Design air content of 7%
- Total cementing materials = 620-lbs/CY
- Same brand and type of Portland cement
- Same source and size of coarse aggregate
- Same source of fine aggregate
- Fine aggregate as a percentage of total aggregate by volume (FA/TA) of approximately 38%
- Same three TDOT-approved chemical admixtures

These additional constraints should facilitate easier comparison of the concrete mixtures used. It is important to note that the w/cm = 0.37 and FA/TA ~ 38% are not considered optimal, but rather that these values met TDOT Class D concrete specifications and have worked well for the authors. The authors hope mixture designers and concrete professionals find the information useful.

In Part 3, some mixtures that have a good chance of reaching the SR “Very Low” category in 7 days are examined. The final article in the series is titled “New Kid in Town” and will examine ground pumice as an SCM.

TABLE 1. CURING TIME REQUIRED FOR SOME MIXTURES TO REACH SURFACE RESISTIVITY CHLORIDE PERMEABILITY CATEGORIES

<table>
<thead>
<tr>
<th>CURING DAYS</th>
<th>MODERATE (SR≥12) (2000≤RCP≤4000)</th>
<th>LOW (SR≥21) (1000≤RCP≤2000)</th>
<th>VERY LOW (SR≥37) (100≤RCP≤1000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>100PC (Smith) 35SL (Current) 40-55SL (Current) 35SL/15F (Smith)</td>
<td>30SL/20F (Smith) 35SL25F (Scott) 3.5MK20F (Eagan)</td>
<td>60 or 65SL (Current)</td>
</tr>
<tr>
<td>14</td>
<td>5SF25C (Eagan)</td>
<td>35SL (Current) 35SL/15F (Smith) 30SL/20F (Smith)</td>
<td>35SL25F (Scott) 3.5MK20F (Eagan) 5MK25C (Eagan)</td>
</tr>
<tr>
<td>21</td>
<td>–</td>
<td>3.5SF20F (Eagan) 5SF25C (Eagan)</td>
<td>55SL (Current)</td>
</tr>
<tr>
<td>28</td>
<td>20 or 25F (Current) 25C (Smith) 50C (Eagan) 30 or 35F (Current)</td>
<td>–</td>
<td>50SL (Current) 35SL25F (Scott)</td>
</tr>
<tr>
<td>42</td>
<td>–</td>
<td>30 or 35F (Current)</td>
<td>45SL (Current) 35SL/15F (Smith) 30SL/20F (Smith) 55SL (Current) 5MK25C (Eagan)</td>
</tr>
<tr>
<td>56</td>
<td>–</td>
<td>50C (Eagan)</td>
<td>40SL (Current) 3.5MK20F (TC Fall 2013) 3.5SF20F (TC Fall 2013) 5MK25C (TC W 13/14) 5SF25C (TC W 13/14) 3MK35F (TC W 13/14)</td>
</tr>
</tbody>
</table>
 INTRODUCTION

The Need for Speed

Table 1 shows curing time required to reach various SR chloride permeability categories for several mixtures. Mixtures highlighted in yellow met TDOT Class D concrete specifications (1). Words or phrases in parenthesis following the mixtures indicate the various projects analyzed. Projects entitled Current indicate the four part “Going Past TDOT Specifications to Lower SR” study. Names indicate the work of former master’s students: Caleb Smith (2), Cory Scott (3) and Blakeslee Eagan (4). TC indicates a past issue of Tennessee Concrete (5, 6). The red fill in Table 1 shows the obvious gap in current mixtures that the authors are attempting to address. TDOT 604.23 require bridge decks to be cured for at least seven days (1). The authors believe it would be ideal to reach the SR “Very Low” category in the TDOT required curing time. The authors believe this to be important since any additional curing is dependent on coating integrity or favorable weather conditions. Eagan (4) provided initial findings investigating this topic.

MATERIALS AND PROCEDURE

The materials shown in column 1 of Table 2 are TDOT-approved with the exception of metakaolin. The proportions of the six mixtures used in the study (see Table 2) were determined by trial batching. All six final mixtures met TDOT Class D concrete plastic and hardened property requirements. Table 3 shows TDOT requirements for minimum cementing materials, w/cm ratio, FA/TA, and allowable SCM replacement percentages. All mixtures met Table 3 criteria except for the maximum SCM replacement percentage. Six batches of each mixture were produced and tested as per Table 4.

A Fortunate Near Miss

The authors were attempting to develop “Fast Lane” mixtures that would reach the SR “Very Low” chloride permeability category in 7 days or less. However, Table 1 also shows that there are no current TTU ternary mixtures that reach the “Low” category in 7 days or the “Very Low” category in 14 days. Therefore, even though early indications were that the 45% slag 3% metakaolin mixture would not be a “Fast Lane” mixture, six larger batches were made and tests were conducted out to 14 days.

RESULTS AND DATA QUALITY

Tables 5 and 6 show 7-day compressive strength and 7-day absorption results, respectively. SR results for 3, 5, and 7 days are shown in Table 7. In addition, 10 and 14-day SR results are shown for the 45% slag, 3% metakaolin mixture in Table 7. The acceptable range of hardened properties was determined by obtaining the standard deviation or coefficient of variation from the appropriate test method and multiplying by an ASTM C 670 factor for the number of test results (10). The multi-laboratory precision was used for 4x8-inch cylinders since AASHTO T 22 states that preparation of cylinders by different operators would probably increase the variation above multi-laboratory precision criteria (7). All hardened property test results met the acceptable precision criteria. Unfortunately, no precision criteria are available for hardened concrete absorption after boiling.

ANALYSIS OF RESULTS

Rate of Increase of SR Results

Table 8 shows curing time required to reach various SR chloride permeability categories for mixtures from parts 1, 2, and 3. “Fast Lane” and “Near Fast Lane” mixtures are highlighted in green and light blue, respectively. Mixtures meeting current TDOT 604.03 Class D requirements for maximum SCM substitution are highlighted in yellow.

Figure 1 shows the development of SR of “Fast Lane” mixtures. A “Fast Lane” mixture is defined as a mixture that reaches the SR “Moderate,” “Low,” and “Very Low” SR chloride permeability categories by 3, 5, and 7 days, respectively. A ternary mixture (35% Slag / 15% Class F fly ash) and a mixture containing no SCMs meeting TDOT 604.03 Class D requirements are highlighted in yellow.

The development of SR of the “Near Fast Lane” mixture is shown in Figure 2. A “Near Fast Lane” mixture is defined as a mixture that reaches the SR “Moderate,” “Low,” and “Very Low” SR chloride permeability categories by 5, 7, and 14 days, respectively. A ternary mixture (35% Slag / 15% Class F fly ash) and a mixture containing no SCMs all meeting TDOT 604.03 Class D requirements are shown for speed references in Figure 1.

The development of SR of the “Near Fast Lane” mixture is shown in Figure 2. A “Near Fast Lane” mixture is defined as a mixture that reaches the SR “Moderate,” “Low,” and “Very Low” SR chloride permeability categories by 5, 7, and 14 days, respectively. A ternary mixture (35% Slag / 15% Class F fly ash), a 25% Class F fly ash mixture and a mixture containing no SCMs all meeting TDOT 604.03 Class D requirements are shown for speed references in Figure 2. Table 8 suggests that 60 and 65% Grade 120 Slag mixtures (from Part 2) may qualify as “Near Fast Lane” mixtures. Unfortunately, 5-day results are not available for these mixtures.
### TABLE 2. MIXTURES USED

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>60SL/5MK</th>
<th>55SL/5MK</th>
<th>55SL/4MK</th>
<th>60SL/3MK</th>
<th>45SL/3MK</th>
<th>70SL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type I PC, (lbs/CY)</td>
<td>217</td>
<td>248</td>
<td>254.2</td>
<td>229.4</td>
<td>322.4</td>
<td>186</td>
</tr>
<tr>
<td>Grade 120 Slag, (lbs./CY)</td>
<td>372</td>
<td>341</td>
<td>341</td>
<td>372</td>
<td>279</td>
<td>434</td>
</tr>
<tr>
<td>Metakaolin, (lbs./CY)</td>
<td>31</td>
<td>31</td>
<td>24.8</td>
<td>18.6</td>
<td>18.6</td>
<td>0</td>
</tr>
<tr>
<td>No. 57 Stone, (SSD lbs/CY)</td>
<td>1862</td>
<td>1863</td>
<td>1864</td>
<td>1863</td>
<td>1865</td>
<td>1863</td>
</tr>
<tr>
<td>River Sand, (SSD lbs/CY)</td>
<td>1123</td>
<td>1123</td>
<td>1125</td>
<td>1123</td>
<td>1125</td>
<td>1125</td>
</tr>
<tr>
<td>Water, (lbs/CY)</td>
<td>229.5</td>
<td>229.5</td>
<td>229.5</td>
<td>229.5</td>
<td>229.5</td>
<td>229.5</td>
</tr>
<tr>
<td>Design Percent Air, (%)</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Air Entrainer, (oz/cwt)</td>
<td>2.01</td>
<td>2.01</td>
<td>2.46</td>
<td>2.00</td>
<td>2.30</td>
<td>2.14</td>
</tr>
<tr>
<td>Mid-Range Water Reducer, (oz/cwt)</td>
<td>5.0</td>
<td>5.0</td>
<td>5.0</td>
<td>5.0</td>
<td>5.0</td>
<td>5.0</td>
</tr>
</tbody>
</table>

### TABLE 3. COMPARISON OF MIXTURES USED WITH TDOT CLASS D PCC REQUIREMENTS

<table>
<thead>
<tr>
<th>QUANTITY/RATIO/PERCENTAGE</th>
<th>TDOT 604.03 CLASS D PCC REQUIREMENT</th>
<th>60SL/5MK</th>
<th>55SL/5MK</th>
<th>55SL/4MK</th>
<th>60SL/3MK</th>
<th>45SL/3MK</th>
<th>70SL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cementing Materials Content (lbs/CY)</td>
<td>620 minimum</td>
<td>620</td>
<td>620</td>
<td>620</td>
<td>620</td>
<td>620</td>
<td>620</td>
</tr>
<tr>
<td>W/CM Ratio</td>
<td>0.40 maximum</td>
<td>0.37</td>
<td>0.37</td>
<td>0.37</td>
<td>0.37</td>
<td>0.37</td>
<td>0.37</td>
</tr>
<tr>
<td>Percent Fine Aggregate by Total Aggregate Volume</td>
<td>44 maximum</td>
<td>38</td>
<td>38</td>
<td>38</td>
<td>38</td>
<td>38</td>
<td>38</td>
</tr>
<tr>
<td>Percent Grade 120 Slag Substitution (by Weight) for PC</td>
<td>35 maximum</td>
<td>60</td>
<td>55</td>
<td>55</td>
<td>60</td>
<td>45</td>
<td>70</td>
</tr>
<tr>
<td>Percent Metakaolin Substitution (by Weight) for PC</td>
<td>Not Allowed</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>

### TABLE 4. TESTING PROTOCOL USED TO EVALUATE EACH MIXTURE

<table>
<thead>
<tr>
<th>TEST METHOD</th>
<th>FREQUENCY</th>
<th>SPECIMENS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compressive Strength, AASHTO T22 (7)</td>
<td>3 @ 7 days</td>
<td>4 x 8 cylinders</td>
</tr>
<tr>
<td>Surface Resistivity, AASHTO T 95-11 (8)</td>
<td>3 @ 3, 5, and 7 days</td>
<td>7-day compressive strength 4 x 8 cylinders</td>
</tr>
<tr>
<td>Hardened Concrete Absorption, ASTM C642 (9)</td>
<td>3 @ 7 days</td>
<td>3 x 6 cylinders</td>
</tr>
</tbody>
</table>

### TABLE 5. 56-DAY MEAN SURFACE RESISTIVITY RESULTS FOR PC AND FLY ASH MIXTURES

<table>
<thead>
<tr>
<th>MIXTURE</th>
<th>BATCH 1</th>
<th>BATCH 2</th>
<th>BATCH 3</th>
<th>BATCH 4</th>
<th>BATCH 5</th>
<th>BATCH 6</th>
<th>MEAN</th>
<th>RANGE</th>
<th>ALLOWABLE RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>60SL/5MK</td>
<td>6610</td>
<td>6560</td>
<td>6690</td>
<td>6670</td>
<td>6060</td>
<td>6370</td>
<td>6493</td>
<td>630</td>
<td>831</td>
</tr>
<tr>
<td>55SL/5MK</td>
<td>6440</td>
<td>6150</td>
<td>6480</td>
<td>6000</td>
<td>6270</td>
<td>6420</td>
<td>6293</td>
<td>480</td>
<td>806</td>
</tr>
<tr>
<td>55SL/4MK</td>
<td>6060</td>
<td>6030</td>
<td>5770</td>
<td>6290</td>
<td>6330</td>
<td>6200</td>
<td>6113</td>
<td>560</td>
<td>783</td>
</tr>
<tr>
<td>60SL/3MK</td>
<td>5920</td>
<td>6220</td>
<td>6280</td>
<td>5940</td>
<td>6010</td>
<td>5810</td>
<td>6030</td>
<td>470</td>
<td>772</td>
</tr>
<tr>
<td>45SL/3MK</td>
<td>5880</td>
<td>6230</td>
<td>6300</td>
<td>6360</td>
<td>6390</td>
<td>6130</td>
<td>6215</td>
<td>510</td>
<td>796</td>
</tr>
<tr>
<td>70SL</td>
<td>5320</td>
<td>5390</td>
<td>5480</td>
<td>5440</td>
<td>5310</td>
<td>5330</td>
<td>5378</td>
<td>170</td>
<td>688</td>
</tr>
</tbody>
</table>
Going Past TDOT Specifications to Lower Concrete Permeability

Part 3: Life in the Fast Lane

Table 9 shows an update of the 7 and 14-day rows of Table 1. “Fast Lane” and “Near Fast Lane” mixtures are included in Table 9. “Fast Lane” and “Near Fast Lane” mixtures are highlighted in green and light blue, respectively. Mixtures meeting current TDOT 604.03 Class D requirements for maximum SCM substitution are highlighted in yellow. This update means there is a new binary and ternary mixture choice for the 7 and 14-day “Low” and “Very Low” SR chloride permeability categories.

Compressive Strength Analysis
The 7-day compressive strength results shown in Table 5 all exceed the 28-day TDOT Class D specification requirement by at least 1300-psi. The results for the six mixtures in the study appear to have no discernable trend on compressive strength as percent slag substitution increases.

Absorption Analysis
The hardened concrete absorption after boiling results shown in Table 6 are acceptable but not exceptional when compared to high performance concrete results of less than 5.0% (11). The results for the all six mixtures in the study range from 5.60 to 6.04% and appear to have no discernable trend on the absorption after boiling as percent slag substitution increases.

Material Cost Analysis
Table 10 (see page 28) shows material cost assumptions for concrete materials except water. Calculations using Table 2 mixture proportions and Table 10 cost assumptions were used to generate Figure 3. Slag mixture costs from Part 2 and 25% Class F fly ash mixture costs from Part 1 of the study are shown in Figure 3 for comparison. The ternary “Fast Lane” mixtures all have a higher cost than the Grade 120 Slag mixtures from Part 2. Using the TDOT-approved 25% Class F fly ash mixture from Part 1 as a standard for reference, “Fast Lane” and “Near Fast Lane” mixtures ranged from 3.5 to 17.7% higher in cost. Therefore, material cost would not be a major factor in mixture choice.
### TABLE 6. 7-DAY ABSORPTION AFTER BOILING RESULTS AND RANGE (%)

<table>
<thead>
<tr>
<th>MIXTURE</th>
<th>BATCH 1</th>
<th>BATCH 2</th>
<th>BATCH 3</th>
<th>BATCH 4</th>
<th>BATCH 5</th>
<th>BATCH 6</th>
<th>MEAN</th>
<th>RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>60SL/5MK</td>
<td>5.48</td>
<td>5.78</td>
<td>5.76</td>
<td>5.70</td>
<td>5.92</td>
<td>5.55</td>
<td>5.70</td>
<td>0.44</td>
</tr>
<tr>
<td>55SL/5MK</td>
<td>5.63</td>
<td>5.39</td>
<td>5.81</td>
<td>5.52</td>
<td>5.65</td>
<td>5.59</td>
<td>5.60</td>
<td>0.42</td>
</tr>
<tr>
<td>55SL/4MK</td>
<td>5.88</td>
<td>6.02</td>
<td>5.96</td>
<td>6.22</td>
<td>5.95</td>
<td>6.23</td>
<td>6.04</td>
<td>0.35</td>
</tr>
<tr>
<td>60SL/3MK</td>
<td>5.78</td>
<td>5.79</td>
<td>5.85</td>
<td>5.74</td>
<td>5.70</td>
<td>5.69</td>
<td>5.76</td>
<td>0.16</td>
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<tr>
<td>45SL/3MK*</td>
<td>5.66</td>
<td>5.56</td>
<td>5.71</td>
<td>5.42</td>
<td>5.65</td>
<td>5.61</td>
<td>5.60</td>
<td>0.29</td>
</tr>
<tr>
<td>70SL</td>
<td>5.98</td>
<td>6.05</td>
<td>5.93</td>
<td>5.98</td>
<td>6.10</td>
<td>6.19</td>
<td>6.04</td>
<td>0.26</td>
</tr>
</tbody>
</table>

*7-day not available, 14-day results shown

### TABLE 7. SURFACE RESISTIVITY RESULTS AND DATA QUALITY

<table>
<thead>
<tr>
<th>MIXTURE</th>
<th>TEST AGE (DAYS)</th>
<th>MEAN RESULT (kΩ-CM)</th>
<th>RANGE OF RESULTS (kΩ-CM)</th>
<th>ALLOWABLE RANGE OF RESULTS (kΩ-CM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>60SL/5MK</td>
<td>3</td>
<td>13.7</td>
<td>1.5</td>
<td>6.9</td>
</tr>
<tr>
<td>60SL/5MK</td>
<td>5</td>
<td>31.7</td>
<td>1.7</td>
<td>15.9</td>
</tr>
<tr>
<td>60SL/5MK</td>
<td>7</td>
<td>45.5</td>
<td>2.2</td>
<td>22.7</td>
</tr>
<tr>
<td>55SL/5MK</td>
<td>3</td>
<td>11.2</td>
<td>1.3</td>
<td>5.6</td>
</tr>
<tr>
<td>55SL/5MK</td>
<td>5</td>
<td>29.3</td>
<td>1.2</td>
<td>14.7</td>
</tr>
<tr>
<td>55SL/5MK</td>
<td>7</td>
<td>42.8</td>
<td>1.5</td>
<td>21.4</td>
</tr>
<tr>
<td>55SL/4MK</td>
<td>3</td>
<td>12.6</td>
<td>0.8</td>
<td>6.3</td>
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<tr>
<td>55SL/4MK</td>
<td>5</td>
<td>26.0</td>
<td>2.0</td>
<td>13.0</td>
</tr>
<tr>
<td>55SL/4MK</td>
<td>7</td>
<td>38.9</td>
<td>4.2</td>
<td>19.4</td>
</tr>
<tr>
<td>60SL/3MK</td>
<td>3</td>
<td>14.1</td>
<td>0.8</td>
<td>7.1</td>
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<tr>
<td>60SL/3MK</td>
<td>5</td>
<td>28.7</td>
<td>1.8</td>
<td>14.3</td>
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<tr>
<td>60SL/3MK</td>
<td>7</td>
<td>40.9</td>
<td>2.3</td>
<td>20.5</td>
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<tr>
<td>45SL/3MK</td>
<td>3</td>
<td>7.9</td>
<td>0.8</td>
<td>4.0</td>
</tr>
<tr>
<td>45SL/3MK</td>
<td>5</td>
<td>13.3</td>
<td>0.7</td>
<td>6.7</td>
</tr>
<tr>
<td>45SL/3MK</td>
<td>7</td>
<td>23.1</td>
<td>0.8</td>
<td>11.5</td>
</tr>
<tr>
<td>45SL/3MK</td>
<td>10</td>
<td>34.5</td>
<td>1.5</td>
<td>17.2</td>
</tr>
<tr>
<td>45SL/3MK</td>
<td>14</td>
<td>46.4</td>
<td>2.3</td>
<td>23.2</td>
</tr>
<tr>
<td>70SL</td>
<td>3</td>
<td>17.8</td>
<td>2</td>
<td>8.9</td>
</tr>
<tr>
<td>70SL</td>
<td>5</td>
<td>31.5</td>
<td>3.6</td>
<td>15.8</td>
</tr>
<tr>
<td>70SL</td>
<td>7</td>
<td>40.0</td>
<td>3.6</td>
<td>20.0</td>
</tr>
</tbody>
</table>
Cautionary Statement

Life in the “Fast Lane” can be very exciting. However, caution should be exercised to maintain control over the situation. “Fast Lane” and “Near Fast Lane” mixtures are considerably diverse when compared to current TDOT Class D mixtures. “Fast Lane” and “Near Fast Lane” mixtures should be thoroughly verified in the laboratory prior to use. If the laboratory investigations are deemed acceptable, an experimental field placement should be placed and monitored for further verification.

CONCLUSIONS

Life in the fast lane (low permeability) is possible. Four ternary and one binary concrete mixture were developed that achieved “Moderate,” “Low,” and “Very Low” SR permeability categories at 3, 5 and 7 days, respectively. The mixtures developed could reach the SR “Very Low” permeability category within the 7-day minimum curing period required by TDOT 604.23 specifications. Doing so, these mixtures would not be dependent on coating integrity or favorable weather for additional curing. All of the mixtures met and exceeded TDOT 604.03 Class D plastic and hardened concrete property requirements while exceeding the specification’s allowable SCM substitutions.

DISCLAIMER

The opinions expressed herein are those of the authors and not necessarily the opinions of the Tennessee Department of Transportation (TDOT) or the Tennessee Concrete Association (TCA).

REFERENCES

1. Tennessee Department of Transportation, Standard Specifications for Road and Bridge Construction, Section 604.03, January 1, 2015.

ACKNOWLEDGEMENTS

The authors wish to gratefully acknowledge the support Frank Lennox of Buzzi-Unicem, Meagan Dangle of Lafarge North America, Mark Casey of SEFA Group, Thiele Kaolin Company, and Denny Lind of BASF for their extensive donations of portland cement, fly ash, metakaolin, and chemical admixtures to the project. The authors appreciate the procurement help provided by Alan Sparkman and the TCA.

In addition, the authors would like to thank Mark Davis and Perry Melton for their patience and skill in fabrication, maintenance, and repair of the equipment.

Continued on page 28
### TABLE 8. COMPARISON OF CURING TIMES REQUIRED TO REACH SURFACE RESISTIVITY CHLORIDE PERMEABILITY CATEGORIES FOR CURRENT STUDY MIXTURES

<table>
<thead>
<tr>
<th>MIXTURE</th>
<th>MODERATE (SR ≥ 12) (2000 ≤ RCP ≤ 4000)</th>
<th>LOW (SR ≥ 21) (1000 ≤ RCP ≤ 2000)</th>
<th>VERY LOW (SR ≥ 37) (100 ≤ RCP ≤ 1000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>60SL/5MK</td>
<td>3 days</td>
<td>5 days</td>
<td>&lt; 7 days</td>
</tr>
<tr>
<td>55SL/5MK</td>
<td>&lt; 5 days</td>
<td>5 days</td>
<td>&lt; 7 days</td>
</tr>
<tr>
<td>55SL/4MK</td>
<td>3 days</td>
<td>5 days</td>
<td>7 days</td>
</tr>
<tr>
<td>60SL/3MK</td>
<td>3 days</td>
<td>5 days</td>
<td>7 days</td>
</tr>
<tr>
<td>45SL/3MK</td>
<td>5 days</td>
<td>7 days</td>
<td>&lt; 14 days</td>
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<tr>
<td>70% Grade 120 Slag</td>
<td>&lt; 3 days</td>
<td>&lt; 7 days</td>
<td>7 days</td>
</tr>
<tr>
<td>65% Grade 120 Slag</td>
<td>&lt; 7 days</td>
<td>7 days</td>
<td>14 days</td>
</tr>
<tr>
<td>60% Grade 120 Slag</td>
<td>&lt; 7 days</td>
<td>7 days</td>
<td>14 days</td>
</tr>
<tr>
<td>55% Grade 120 Slag</td>
<td>7 days</td>
<td>14 days</td>
<td>21 days</td>
</tr>
<tr>
<td>50% Grade 120 Slag</td>
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<td>45% Grade 120 Slag</td>
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<td>14 days</td>
<td>42 days</td>
</tr>
<tr>
<td>40% Grade 120 Slag</td>
<td>7 days</td>
<td>14 days</td>
<td>56 days</td>
</tr>
<tr>
<td>35% Grade 120 Slag</td>
<td>7 days</td>
<td>14 days</td>
<td>Did Not Reach</td>
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<td>30% Class F Fly Ash</td>
<td>28 days</td>
<td>Did Not Reach</td>
<td>Did Not Reach</td>
</tr>
<tr>
<td>35% Class F Fly Ash</td>
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<td>Did Not Reach</td>
<td>Did Not Reach</td>
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<td>20% Class F Fly Ash</td>
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<td>Did Not Reach</td>
</tr>
<tr>
<td>25% Class F Fly Ash</td>
<td>28 days</td>
<td>Did Not Reach</td>
<td>Did Not Reach</td>
</tr>
<tr>
<td>35% Class F Fly Ash</td>
<td>28 days</td>
<td>Did Not Reach</td>
<td>Did Not Reach</td>
</tr>
</tbody>
</table>

### TABLE 9. CURING TIME REQUIRED FOR SOME MIXTURES TO REACH SURFACE RESISTIVITY CHLORIDE PERMEABILITY CATEGORIES

<table>
<thead>
<tr>
<th>CURING DAYS</th>
<th>MODERATE (SR ≥ 12) (2000 ≤ RCP ≤ 4000)</th>
<th>LOW (SR ≥ 21) (1000 ≤ RCP ≤ 2000)</th>
<th>VERY LOW (SR ≥ 37) (100 ≤ RCP ≤ 1000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>100PC (Smith) 35SL (Current) 40-55SL (Current) 35SL/15F (Smith) 30SL/20F (Smith) 35SL25F (Scott) 3.5MK20F (Eagan)</td>
<td>60 or 65SL (Current) 45SL/3MK</td>
<td>60SL/5MK 55SL/5MK 55SL/4MK 60SL/3MK 70SL</td>
</tr>
<tr>
<td>14</td>
<td>5SF25C (Eagan) 35SL (Current) 40-55SL (Current) 35SL/15F (Smith) 30SL/20F (Smith) 35SL25F (Scott) 3.5MK20F (Eagan)</td>
<td>60 or 65SL (Current) 45SL/3MK</td>
<td></td>
</tr>
</tbody>
</table>
Overview of TCA Services and Staff......14
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Affiliate Members ................................22
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Concrete Contractors ...........................26

The Tennessee Concrete Association (TCA) was founded in 1986 to promote the increased use of ready mixed concrete in Tennessee. Our mission statement is: “The TCA is the unified voice for the concrete industry to improve our image and awareness through advocacy, promotion and education that support our members, our community, and our future.” We work to fulfill this mission in all of our activities. We invite you to join us in building a concrete industry we can all be proud of. Supported primarily by membership dues, the association is governed by a 12 member board of directors elected annually by members. The board includes 8 Ready-mixed Producer members, 3 Associate members and 1 Affiliate member.

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Alan Sparkman
Executive Director

Darla Sparkman
Director of Certifications & Events

Donna Thompson
Marketing, Online Learning & Event Manager

Julia Hudson
Online Education Coordinator

To verify an individual’s ACI Certifications, visit: http://bit.ly/2adlqlf
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1986-1987
Reid Brown, PH.D.
Vulcan Materials
Chattanooga

1988
Richard Jones, Jr.
Southdown, Inc.
Knoxville

1989
Bob Mayfield
Furcum-Lannom
Dyersburg

1990
Craig Kirchoff
Lone Star Industries
Nashville

1991
Joe Fowler
American Limestone Co.
Knoxville

1992
Ernie Walker, Sr.
Transit-Mix Concrete
Johnson City

1993-1994
E.H. (Sonny) Garrott III
Garrott Bros. Continuous Mix
Galatin

1995-1996
Joe Bigford
City Concrete Co.
Jackson

1997-1998
Carl Storms
Concrete Materials Inc.
Morristown

1998-1999
Joe Fulks
Harper Construction
Shelbyville

1999-2000
Mike Carrier
Carrier Concrete
Memphis

2000-2001
Walter Law
Ready Mix Concrete
Maryville

2001-2002
Bob Haldrup
Irving Materials, Inc.
Nashville

2002-2003
John Loven
Loven Ready Mix
Greeneville

2003-2004
Steve Herron
Metro Ready Mix
Nashville

2004-2005
Greg Garron
Union Concrete
Maynardville

2005-2006
Jim Hughes
Builders Supply Co.
Cookeville

2006-2007
Rick Odle
Southern Concrete Products
Jackson

2007-2008
Dennie Underwood
Blalock Ready Mix
Sevierville

2008-2009
John Curtis
Irving Materials, Inc.
Nashville

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City Concrete
Memphis

2010-2011
Andrea Childress
Childress Concrete Co.
Lewisburg

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Kodak

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Mike Zagula
Metro Ready Mix Concrete Co.

2013-2014
Dennis Johns
Mid-South Concrete

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Bate Bond
B.T. Redi-Mix

2015-2016
Bobby Crass
C & C Concrete Products

2016-2017
Tonya Alexander
Irving Materials, Inc.

2017-2018
Cole Dodds
Southern Concrete Products

2019 TCA PROGRAMS

Annual Convention – Brings all members together to celebrate the year’s accomplishments and to learn about the latest issues.

Tennessee Concrete Magazine – Published 3 times annually with research reports and current industry articles.

Membership Directory – Published annually (Summer issue of TNC magazine) with information advertising your company.

Member Updates – Throughtout the year (via email), to keep you informed of Association programs, industry activities, and promotional events.

Concrete Excellence Awards – Design, Construction and Environmental awards for projects and plants across Tennessee.

Product Demonstrations & Seminars – Decorative, Pervious, Insulated Concrete Forms, Whitetopping, Flowable Fill and more.

Statewide High School Concrete Essay Contest

Trade Show Displays

Concrete Career Academy – Our new online learning system offers prep courses to help concrete professionals prepare for certification courses in flatwork, and more. https://www.pathlms.com/cca

TCA Website – www.tnconcrete.org and visit us on Facebook at https://www.facebook.com/tnconcrete/

Training and Certification
- ACI Field Testing Technician, Grade 1
- ACI Flatwork Finisher & Technician
- ACI Decorative Concrete Flatwork
- ACI Adhesive and Anchor Inspector
- ACI Aggregate/Soils Bast Testing Tech 1 & 2
- ACI Concrete Laboratory Testing Technician Grade 1 & 2
- ACI Concrete Construction Special Inspector
- ACI Concrete Strength Testing Technician
- ACI Concrete Transportation Construction Inspector
- ACI Self-Consolidating Concrete Testing Technician
- NRMCA Certified Driver Training
- NRMCA Certified Concrete Production Technologist
- NRMCA Pervious Installer Certification
- NRMCA Certified Concrete Sales Professional
- NRMCA Volumetric Mixer Operator Certification

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Sevierville

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Kodak

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Mike Zagula
Metro Ready Mix Concrete Co.

2013-2014
Dennis Johns
Mid-South Concrete

2014-2015
Bate Bond
B.T. Redi-Mix

2015-2016
Bobby Crass
C & C Concrete Products

2016-2017
Tonya Alexander
Irving Materials, Inc.

2017-2018
Cole Dodds
Southern Concrete Products

2003-2004
Steve Herron
Metro Ready Mix
Nashville

2004-2005
Greg Garron
Union Concrete
Maynardville

2005-2006
Jim Hughes
Builders Supply Co.
Cookeville
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Ready Mixed Concrete Producer Members

A&W Ready Mix, LLC
151 Kyker Ferry Rd
Kodak, TN 37764
Primary Contact: Steve Smith
Phone: (865) 932-4010
Fax: (865) 365-2734
www.awreadymix.com

Products/Services: Ready Mix Concrete, Aggregate Hauling, NRMCA Certified Plant

Abernathy Concrete Co., Inc.
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Pulaski, TN 37847
Primary Contact: Bill Abernathy
Phone: (931) 363-1527
Fax: (931) 363-1528
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Pigeon Forge, TN 37863
Primary Contact: Wes Blalock
Phone: (865) 453-2808
Fax: (865) 365-2734
www.blalockcompanies.com

Products/Services: Ready Mix Concrete, Concrete Pumping, RediRock Retaining Wall System, NRMCA Certified Plants & Fleet, NPCA Certified Precast Plant

Builders Supply Co.
50 Scott Ave.
Cookeville, TN 38501
Primary Contact: Clark Simpson
Phone: (931) 526-9704
Fax: (931) 528-8510
www.bscblock.com

Products/Services: Ready Mix Concrete, Building Materials, Concrete Block Manufacturer, Brick & Lumber

C & C Redi-Mix Inc.
5710 Harriman Hwy
Oliver Springs, TN 37840
Primary Contact: Tony Crass
Phone: (865) 435-1445
Fax: (865) 435-0551
www.ccreadymix.com

Products/Services: Ready Mix Concrete Services

C & C Redi-Mix Inc.
PO Box 216
Carrathage, TN 37030
Primary Contact: Phillip Hudson, Jr.
Phone: (615) 735-1786
Fax: (615) 735-1475
www.cumberlandsupplyco.com

Products/Services: Ready Mix Concrete, TDOT Certified, Brick, Block, Lumber, Hardware, Masonary & Millwork

Dixie Ready-Mix Concrete Co., Inc.
1414 Old Jacksboro Hwy
La Follette, TN 37766
Primary Contact: Ray Henson
Phone: (423) 562-2277
Fax: (423) 562-0424

Products/Services: Ready-Mix Concrete, Wire Mesh-Rebar, Septic Tanks, Wall Blocks, Masonry Sand

Garrott Bros Continuous Mix, Inc.
PO Box 419
Gallatin, TN 37066
Primary Contact: Daniel Bugbee
Phone: (615) 452-2385
Fax: (615) 452-8932
www.garrottbros.com

Products/Services: Ready Mix Concrete Services

Harrison Construction Co.
4817 Rutledge Pike
Knoxville, TN 37914
Primary Contact: Greg Lowrey
Phone: (865) 934-4621
Fax: (865) 546-9744
www.harrisoncc.com

Products/Services: Ready Mix Services and Aggregate Sales

Irvine Materials Inc.
2001 Antioch Pike
Nashville, TN 37013
Primary Contact: Tony Alexander
Phone: (615) 884-4935
Fax: (615) 338-5171
www.irvmat.com

Products/Services: Ready Mixed Concrete, Related Products, Aggregate, Sand & Pervious Concrete

Lowrey Products/Services: Ready Mix Concrete Services, Block, Hardscape & Masonry Products, Building Supply Products

Additional Information:

Dandridge
1070 Epcos Dr.
Dandridge, TN 37725

Morristown
1527 W. 1st N. St.
Morristown, TN 37814

Irving Materials Inc.
2001 Antioch Pike
Nashville, TN 37013
Primary Contact: Tony Alexander
Phone: (615) 884-4935
Fax: (615) 338-5171
www.irvmat.com

Products/Services: Ready Mixed Concrete, Related Products, Aggregate, Sand & Pervious Concrete

Additional Information:

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261 Needmore Rd
Clarksville, TN 37042
Phone: (931) 552-6026

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4616 Hardison Mill Rd
Columbia, TN 38401
Phone: (931) 540-8248

Crossville
252 Maryette Ave.
Crossville, TN 38555
Phone: (931) 484-5588

Products/Services: Ready-Mix Concrete, Wire Mesh-Rebar, Septic Tanks, Wall Blocks, Masonry Sand

Additional Information:

Clarksville
261 Needmore Rd
Clarksville, TN 37042
Phone: (931) 552-6026

Columbia
4616 Hardison Mill Rd
Columbia, TN 38401
Phone: (931) 540-8248

Crossville
252 Maryette Ave.
Crossville, TN 38555
Phone: (931) 484-5588

Products/Services: Ready-Mix Concrete, Wire Mesh-Rebar, Septic Tanks, Wall Blocks, Masonry Sand

Additional Information:
Dickson  
1550 Old Columbia Rd  
Dickson, TN 37055  
Phone: (615) 740-7001

Dover  
646 Highway 79  
Dover, TN 37058  
Phone: (931) 232-7001

Fayetteville  
8 Cessna Road  
Fayetteville, TN 37334  
Phone: (931) 438-7337

Franklin  
515 Downs Blvd.  
Franklin, TN 37064  
Phone: (615) 224-9000

Goodlettsville  
109 Long Dr.  
Goodlettsville, TN 37072  
Phone: (931) 723-8747

Jamestown  
315 Althreet Rd.  
Jamestown, TN 38556  
Phone: (931) 879-5098

Lawrenceburg  
2112 Helton Dr.  
Lawrenceburg, TN 38464  
Phone: (931) 762-6409

Lebanon  
400 S. College St.  
Lebanon, TN 37087  
Phone: (615) 444-0454

Livingston  
220 School Mtn. Rd  
Livingston, TN 38570  
Phone: (931) 823-5060

Manchester  
213 E. Coffee St.  
Manchester, TN 37355  
Phone: (931) 723-8747

Murfreesboro  
5445 Manchester Hwy  
Murfreesboro, TN 37357  
Phone: (931) 815-1070

Mt. Juliet  
445 Industrial Dr.  
Mt. Juliet, TN 37122  
Phone: (615) 758-5687

Nashville  
151 Bush Rd  
Nashville, TN 37217  
Phone: (615) 367-2918

Smithville  
805 S. College St.  
Smithville, TN 37166  
Phone: (615) 597-4149

Sparta  
171 imix Rd  
Sparta, TN 38583  
Phone: (931) 836-2576

Spring Hill  
758 Beechcroft Rd  
Spring Hill, TN 37174  
Phone: (931) 486-9072

Tullahoma  
519 V olney St  
Tullahoma, TN 38388  
Phone: (615) 219-0966

Manchester  
3636 Central Pike  
Manchester, TN 37076  
Phone: (615) 885-3640

Mid-State Mobile Concrete, Inc.  
3636 Central Pike  
Hermitage, TN 37076  
Primary Contact: Matt Weathers  
Phone: (615) 574-0061  
Fax: (615) 885-3640  
www.midsatemobileconcrete.com

Mid-Way Materials, Inc.  
128 Natchez Trace Rd.  
Cordova, TN 38320  
Primary Contact: Jon Hargett  
Phone: (731) 584-6991  
Fax: (731) 584-2523  
www.midwaymaterials.com

Mobile Materials Nashville, LLC  
1650 54th Ave. N  
Nashville, TN 37209  
Primary Contact: Scott D Eller  
Phone: (615) 414-2591  
Email: scotteller@mobilematerialsnashville.com  
www.mobilematerialsnashville.com

Orgain Ready Mix Concrete Co. Inc.  
PO Box 561  
Clarksville, TN 37041  
Primary Contact: John Manning  
Phone: (931) 647-1597  
Fax: (931) 552-2484  
www.orgainreadymix.com

Pavement Restorations, Inc.  
10162 Stonson St.  
Milan, TN 38358  
Primary Contact: Jon Hargett  
Phone: (731) 239-2119  
Fax: (731) 613-2019  
www.gotpotholes.net

Products/Services: Ready Mix Concrete, NRMCA Certified Plant & Fleet

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Leoma, TN 38468  
Phone: (931) 363-0690

Pulaski  
1750 Brady Lane  
Pulaski, TN 38478  
Phone: (931) 363-0690

Student Ready Mix  
1029 John A. Denie Rd.  
Memphis, TN 38134  
Primary Contact: Jamie Johnson  
Phone: (901) 386-4499  
Email: jasonjohnson@buzziunicemusa.com  
www.buzziunicemusa.com

Midsouth Ready Mix  
128 Natchez Trace Rd.  
Cordova, TN 38320  
Primary Contact: Larry Dobson, Jr.  
Phone: (731) 584-6991  
Fax: (731) 584-2523  
www.midsouthconcrete.com

Products/Services: Concrete Ready Mix via Volumetric Trucks. Our trucks mix concrete on site & we only charge for what the customer uses. No more ordering in order to make sure you have enough.

Products/Services: Ready Mix Concrete Services

Products/Services: Ready Mix Concrete & Asphalt Restoration Services Including Volumetric Concrete Supply
Kingsport
1543 S. Wilcox Dr.
Kingsport, TN 37660
Phone: (423) 246-7701
Knoxville
2200 Neyland Dr.
Knoxville, TN 37916
Phone: (865) 544-0320

Additional Information:
Pioneer
170 Royal Lane
Pioneer, TN
Phone: (423) 494-1117

Ready Mix USA
PO Box 2389
Knoxville, TN 37901
Primary Contact: Joe Fowler
Phone: (865) 573-4501
Fax: (865) 573-4501
www.readymixusa.com
Products/Services: Ready Mixed Concrete - Sales: Shelley Parham-Tri-Cities (423)744-0022, Javier Melendez-Chattanooga (423)595-0954, Derek Moore-Knoxville (423)327-1395

River City Concrete, Inc.
9160 Hwy 128 South
Savannah, TN 38372
Primary Contact: Wade Williams
Phone: (731) 925-0271
Fax: (731) 925-9894
www.rivercity-concrete.com
Products/Services: Ready Mix Concrete, Precast Products, Concrete Blocks, Concrete Reinforcing Products, Sand & Gravel Hauling

Additional Information:
Selmer
850 Mulberry Ave.
Selmer, TN 38375
Phone: (731) 645-7903
Waynesboro
1041 Lawrenceburg Hwy
Waynesboro, TN 38485
Phone: (931) 722-3816

Screaming Eagle Ready Mix
490 Barge Point Rd.
Clarksville, TN 37042
Primary Contact: Duane King
Phone: (931) 553-4101
Fax: (931) 553-5011
www.screamingeaglereadymix.com
Products/Services: Concrete Services, Related Supplies, Concrete Tools, Building Materials & Sealers
Additional Information:
Clarksville
1040 International Blvd.
Clarksville, TN 37040
Phone: (931) 553-4101

Sequatchie Concrete Service
PO Box 129
South Pittsburg, TN 37380
Primary Contact: Tim Costa
Phone: (423) 718-0441
Fax: (423) 837-7479
www.sequatchieconcrete.com
Products/Services: Ready Mix Concrete Production, Structural Precast, Concrete Block, Sand, & Segmented Retaining Walls
Additional Information:
Athens
3106 Lee Hwy.
Athens, TN 37303
Phone: (423) 774-9049
Calhoun
4958 Hwy 11 South
Calhoun, TN 37309
Phone: (423) 641-0815
Chattanooga
1400 East 37th St.
Chattanooga, TN 37407
Phone: (423) 867-6035
Chattanooga
3954 Cromwell Rd.
Chattanooga, TN 37421
Phone: (423) 388-4781
Cleveland
1601 6th St. NE
Cleveland, TN 37311
Phone: (423) 641-1049
Dayton
131 Avant Lane
Dayton, TN 37321
Phone: (423) 755-9491
Dunlap
Hwy 128 Branch Road
Dunlap, TN 37327
Phone: (615) 647-6854

Huntsville
6206 Springfield Rd.
Huntsville, TN 35810
Phone: (256) 763-7512
Knoxville
2100 Sutherland Ave.
Knoxville, TN 37939
Phone: (865) 240-2564

Southern Concrete Products, Inc.
PO Box 1256
Jackson, TN 38302
Primary Contact: Rick Odle
Phone: (731) 422-3358
Fax: (731) 427-1604
www.southernconcrete.com
Products/Services: Ready Mix Concrete, Concrete Fence, Building Materials, Parking Bumpers & Septic Tanks, Pervious
Additional Information:
Bolivar
18260 Hwy 125 South
Bolivar, TN 38008
Phone: (731) 422-3358
Dyersburg
1705 Tennyson Ave.
Dyersburg, TN 38024
Phone: (731) 422-3358
Henderson
745 US Hwy 45 S.
Henderson, TN 38340
Phone: (731) 422-3358
Jackson
860 Westover Rd
Jackson, TN 38301
Phone: (731) 422-3358
Jackson
86 United Dr.
Jackson, TN 38305
Phone: (731) 422-3358
Lexington
266 E. Church St.
Lexington, TN 38351
Phone: (731) 968-2537
Milan
2500 Graball St.
Milan, TN 38358
Phone: (731) 422-3358
Summer 2019

Ready Mixed Concrete Producer Members

Paris
535 Russell St.
Paris, TN 38242
Phone: (731) 642-6672

Union City
106 Barham Rd.
Union City, TN 38261
Phone: (731) 885-7060

Superior Walls of East TN
10144 Sparta Hwy
Rock Island, TN 38581
Primary Contact: Stacey Harvey
Phone: (931) 686-3240
Fax: (931) 686-8001
www.superiorwalls.com
Products/Services: Superior Walls Precast Concrete
Basement Walls (Design, Production, Installation, Service/Warranty) Precast Concrete Products, NCPA & TDOT Qualified Plant

Transit-Mix Concrete Co.
PO Box 1275
Johnson City, TN 37605
Primary Contact: Ernie Walker
Phone: (423) 928-2128
Fax: (423) 926-7867
www.tmix.com
Products/Services: Ready Mixed Concrete, Stone Slinger Services, Concrete Building Products, ICF Distributor, Retaining Wall Blocks

Tri-State Ready Mix
1634 Ferrell Park Cove
Memphis, TN 38116
Primary Contact: Josh Evans
Phone: (901) 396-8900
Fax: (901) 396-8879
www.tristatereadymix.com
Products/Services: Ready Mix Concrete Producer, Ready Mix Concrete Supplier
Additional Information:

Cordova
1323 Rebel Rd.
Cordova, TN
Phone: (901) 396-8900

Twin K Enterprises, LLC
16906 Alberta St.
Oneida, TN 37841
Primary Contact: Kelley Krahm
Phone: (423) 569-2049
Fax: (423) 569-4084
Products/Services: Ready Mix Concrete, Septic Tanks, Aggregate, Precast Products, Concrete Supplies
Additional Information:

Harriman
348 Pooland Hollow Rd.
Harriman, TN
Phone: (865) 234-7114

Oneida
16906 Alberta St.
Oneida, TN
Phone: (423) 569-6341

Wartburg
3612 Morgan Co Hwy
Wartburg, TN

VanHooseco Ready Mix
244 Blair Bend Dr.
Loudon, TN 37774
Primary Contact: Jeff VanHoose
Phone: (865) 458-3998
Fax: (865) 458-3494
www.vanhooseco.com
Products/Services: Roller Compacted Concrete, Self Consolidating Concrete, Pervious Concrete, Precast Wall Systems, Structural Precast Concrete, On Site Certified Lab, Underground Storm Water Systems

Volunteer Concrete
PO Box 682423
Franklin, TN 37068
Primary Contact: Jeremy Cole
Phone: (931) 364-5900
jcole@volunteerconcrete.com
www.volunteerconcrete.com
Products/Services: Ready Mix Concrete Producer, Concrete Pumping, Stone Hauling, NRMCA Certified
Additional Information:

Lewisburg
750 HWwy 99
Lewisburg, TN
Phone: (931) 364-5900

West TN Ready Mix
380 Pierce Rd.
Oakland, TN 38060
Primary Contact: Herron Odle
Phone: (901) 466-3030
Fax: (901) 466-3090
Products/Services: Ready Mix Concrete Services

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Help us today make sure YOU are getting all the news by emailing Donna Thompson at donna@tnconcrete.org to get started receiving the Member Update each week!

All we need is their name and email address.
**BASF Admixtures**

485 Broadberry Ave.
Oak Ridge, TN 37830

Primary Contact: Jason Ford
Phone: (423) 609-0235
jason.a.ford@basf.com
www.basf-admixtures.com

Products/Services: Glenium Series of Admixtures, Green Sense Concrete, MasterFiber, x-seed Accelerator, MasterLife 300D Waterproofing

Additional Information:
- Steven Bell - Technical Sales Rep.
- Ron Shirley - Technical Sales Rep.
Phone: (901) 355-8306

**GCP Applied Technologies**

62 Whittmore Ave.
Cambridge, MA 02140

Primary Contact: Jeff Slaughter
Phone: (314) 303-4880
jeff.slaughter@gcpat.com
www.gcp.com

Products/Services: Full Line of Chemical Admixtures, Color & Fiber Products for Precast, Masonry & Ready Mixed Concrete. Verified technology for in transit concrete management

Additional Information:
- Zack Swanson - Technical Sales
  Phone: (410) 794-6973
  zack.swanson@gcpat.com
- Dan Meine - Director of Sales
  dan.meine@gcpat.com

**Sika Corporation**

1930 Sarasota Business Pkwy
Conyers, GA 30013

Primary Contact: Jason Zelinski
Phone: (770) 909-0869
zelinski.jason@us.sika.com
www.usa.sika.com

Products/Services: Admixture Products & Applications

Additional Information:
- Bryan Strevel
  Phone: (615) 828-7332
  strevel.bryan@us.sika.com

**Cemex**

PO Box 100813
Birmingham, AL 35210

Primary Contact: Lynn Rasco
Phone: (205) 967-5211
www.cemexusa.com

Products/Services: Portland Cement

Additional Information:
- Knoxville Plant Sales Mgr.
  Mickey Bradley (865) 267-7672
- Nashville Terminal Sales Mgr.
  Eddie Eaton (615) 478-7594
cody.eaton@cemex.com

**Buzzi Unicem USA, Inc.**

421 Great Circle Rd.
Nashville, TN 37202

Primary Contact: Granville Grant
Phone: (615) 613-1115
granville.grant@rogersgroupinc.com
www.rogersgroupinc.com

Products/Services: Crushes Stone and Natural Sand & Construction Services

**Vulcan Materials Co.**

115 East Park Dr. Ste 100
Brentwood, TN 37027

Primary Contact: Jon Badgett
Phone: (615) 361-8550
badgettj@vmcmail.com
www.vulcanmaterials.com

Products/Services: Crushed Stone & Sand

Additional Information:
- Rebekah Bomar
  bomarr@vmcmail.com

**Cement**

Buzzi Unicem USA, Inc.

Primary Contact: Dan Rinke
Phone: (901) 409-3775
dan.rinke@buzziunicemusa.com
www.buzziunicemusa.com

Products/Services: Portland and Masonry Cement

Additional Information:
- Ric Sutter, Sr.VP Sales
  Phone: (901) 409-3775
- Dwayne Stone, Market Mgr.
  (Memphis):(615) 351-6145
- Hunter Wallace, Market Mgr.
  (Chatt & Knoxville) (423) 645-4046

**Aggregate**

Pine Bluff Materials Co.

1030 Visco Drive
Nashville, TN 37210

Primary Contact: Mike Bohleber
Phone: (615) 254-1956
mike.bohleber@pbmat.com
www.pbmat.com

Products/Services: Specification Sand, Gravel & Stone

**Continental Cement Co.**

16401 Swingley Ridge Rd. Suite 610
Chesterfield, MO 63017

Primary Contact: Stewart Parker
Phone: (636) 532-7440
stewart.parker@continentalcement.com
www.continentalcement.com

Products/Services: Cement Manufacturer

Additional Information:
- Mike Gordon, VP Sales & Marketing (800) 625-1144
- Kevin Hayes Terminal Mgr. (901) 525-0311

**LafargeHolcim**

810 Crescent Centre Dr. Ste.180
Franklin, TN 37067

Primary Contact: Benoit Cotnoir
Phone: (913) 915-7455
benoit.cotnoir@lafargeholcim.com
www.lafargeholcim.com

Products/Services: Portland Cement, Slag, Masonry & Oilwell Cement

Additional Information:
- Tim Langelier Marketing Manager TN (615) 330-1776
- David Parker Technical Service Eng. (615) 202-8064
- Joey Doree (870) 215-3420

**Euclid Chemical Company**

19218 Redwood Rd
Cleveland, OH 44110

Primary Contact: Kyle Norwood
Phone: (216) 497-4913
knorwood@euclidchemical.com
www.euclidchemical.com

Products/Services: We provide concrete products such as fibers, sealers, admixtures & integral colors for Decorative Concrete.
Lehigh Cement Co.
400 Riverhills Business Park
Ste.437
Birmingham, AL 35242
Primary Contact: Phil Detwiler
Phone: (205) 969-5803
pdetwiler@lehighcement.com
www.lehighhanson.com
Products/Services: Cement sales
Additional Information:
Tray Breitbarth (770)605-0854
Middle & East TN, Grady Gunn
(205) 901-6105 West TN

National Cement Co. of Alabama
2000 Southbridge Pkwy
Woodstock, GA 30188
Primary Contact: Stephen Snipes
Phone: (205) 423-2600
ssnipes@natcem.com
www.nationalcement.com
Products/Services: Portland Cement Type I, Ib, III, Portland & Masonry Cement Bags
Additional Information:
Scott East Territory Mgr (404) 647-9643

Charah Solutions, Inc.
12601 Plantside Dr.
Louisville, KY 40299
Primary Contact: Sara Griffin
Phone: (502) 245-1353 Ext. 5073
sgriffin@charah.com
www.charah.com
Products/Services: Charah is a leading provider of Class C&F fly ash to Ready Mix Producers throughout the country via its MultiSource network.
Additional Information:
Randy Compton-VP Sales (865) 414-1518
Christian Lentz-Sales Gen.Mgr (502) 552-6538

FLYASH
Boral Resources
904 Raven Point
Canton, GA 30114
Primary Contact: Darrell Wilson
Phone: (336) 210-7435
darrell.wilson@boral.com
www.boralamerica.com
Products/Services: Marketeer of Fly Ash, Fly Ash Sales, Disposal, Bottom Ash Sales, Bottom Ash Disposal
Additional Information: Greg Thomas (501)844-6607

Charah Solutions, Inc.
12601 Plantside Dr.
Louisville, KY 40299
Primary Contact: Sara Griffin
Phone: (502) 245-1353 Ext. 5073
sgriffin@charah.com
www.charah.com
Products/Services: Charah is a leading provider of Class C&F fly ash to Ready Mix Producers throughout the country via its MultiSource network.
Additional Information:
Randy Compton-VP Sales (865) 414-1518
Christian Lentz-Sales Gen.Mgr (502) 552-6538

Waste Mgmt/Fly Ash Direct
5128 Grand Oak Way
Brentwood, TN 37027
Primary Contact: Bill Hunt
Phone: (615) 419-9151
whunt@wm.com
www.flyashdirect.com
Products/Services: Dry Bulk Fly Ash, TDOT Approved Class C, Bottom Ash & Gypsum
Additional Information: Bill Hunt, Business Development Mgr.

FIBER
ADMIXUS
2923 Boones Creek Road
Johnson City, TN 37615
Primary Contact: Bruce Prezzavento
Phone: (423) 282-4242 Ext. 241
bprezzavento@minifibers.com
www.admixus.com
Products/Services: ADMIXUS ES, ADMIXUS LS, ADMIXUS AS, ADMIXUS RC & ADMIXUS EZ

Durafiber, Inc.
714 West Main St. Suite 205
Murfreesboro, TN 37129
Primary Contact: Mike Deaton
Phone: (615) 333-9883
durafiber@aol.com
www.durafiber.com
Products/Services: Ultrafiber 500, Polypropylene Fiber, Steel Fiber, Fritz Pak Products

The SEFA Group
217 Cedar Rd.
Lexington, SC 29073
Primary Contact: Bert Nunn
Phone: (803) 520-9000
bnunn@sefagroup.com
www.sefagroup.com
Products/Services: Class F Fly Ash, Technical Services & Engineering
Additional Information: Mark Casey Technical Sales & Service (865)806-6950
Clark Gates Technical Sales & Service (615) 202-1001

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All we need is their name and email address.

Email Donna Thompson at donna@tnconcrete.org to get started receiving the Member Update each week!
### BUSINESS SERVICES

**SmartDrive Systems**
4790 Eastgate Mall Ste.200
San Diego, CA 92121
**Primary Contact:** Jeff Zola
**Phone:** (858) 225-5550
jeffzola@smartdrive.net
**Products/Services:** A Video Based Safety & Transportation Intelligence Program

### CONCRETE PUMPING

**Concrete Pump Partners**
1309 Brown St.
Nashville, TN 37203
**Primary Contact:** Jon Kemp
**Phone:** (615) 299-9899
jokemp@msn.com
**Products/Services:** Concrete Pumping Services

**Reynolds Concrete Pumping**
720 Beech St.
Bowling Green, KY 42101
**Primary Contact:** Johnny Phillips
**Phone:** (615) 213-2600
jphillips@reynoldscorporation.com
**Products/Services:** Concrete Pumping Services: Boom Pumps, Line Pumps, Placing Booms, Rock Slingers

### CONSTRUCTION EQUIPMENT

**Multivibe, Inc.**
3125 N. Friendship Rd.
Paducah, KY 42001
**Primary Contact:** Carl Ellis
**Phone:** (270) 554-2615
carle@multivibe.com
**Products/Services:** Vibratory Screeds (Gas & Electric), Wall Vibrators, Roller Screeds

**Power Rental & Sales**
3653A Trousdale Dr.
Nashville, TN 37204
**Primary Contact:** Brent Cornelius
**Phone:** (615) 837-1450
bc.powerrental@yahoo.com
**Products/Services:** Vertical forms, Masonry Supplies, Power Tools & Grinders

### MATERIAL SUPPLIERS

**Clemmons Concrete Coatings**
505 Cave Rd.
Nashville, TN 37210
**Primary Contact:** Rich Sanders
**Phone:** (615) 872-9099
rich@ccc-usa.com
**Products/Services:** Sealers, Retarders, Curing Compounds, Stains, and Form Release

**Sicalco, Ltd.**
522 Chestnut St. Suite GB
Hinsdale, IL 60521
**Primary Contact:** Kevin Casto
**Phone:** (312) 404-9207
fsibn@sicalco.net
**Products/Services:** Marketers of Liquidow(tm) Calcium Chloride

**Solomon Colors/Brickform**
4050 Color Plant Rd
Springfield, IL 62702
**Primary Contact:** Aaron Thomas
**Phone:** (217) 416-7737
athomas@solomoncolors.com
**Products/Services:** Colors for Concrete Liquid, Dry, & Granular, Decorative Concrete Stains, Stamps, Sealers, Ultrafiber

**Spray-Lock Concrete Protection**
5904 Shallowford Rd. Ste.405
Chattanooga, TN 37421
**Primary Contact:** Lee Thrasher
**Phone:** (470) 865-0809
lthrasher@spraylock.com
**Office:** (423) 305-6151
**Products/Services:** Spray Lock Concrete Protection strives to make concrete better by providing colloidal silica products that stabilize concrete PH & completely fill available pores & capillaries.

### PRECAST

**Bradley Tank & Pipe, LLC**
PO Box 3146
Cleveland, TN 37328
**Primary Contact:** Eddie Johnson
**Phone:** (423) 479-4482
edjohnson@bradleytankandpipe.com
**Products/Services:** Redi-Rock Retaining Walls, Sanitary/Storm-Manholes, Utility Structures, Grease Interceptors & Water Quality Structures

**C.R. Barger & Sons, Inc.**
PO Box 370
Kingston, TN 37763
**Primary Contact:** Eric Barger
**Phone:** (865) 270-8808
eric@bargerandsons.com
**Products/Services:** Retaining Wall Blocks, Manholes, Structures, Box Culverts, TDOT Certified & NPCA Certified Plant

**Foley Products Co.**
PO Box 2447
Columbus, GA 31902
**Primary Contact:** Ed Knox
**Phone:** (706) 563-7882
eknox@theconcreteco.com
**Products/Services:** Precast Box & Round Structures, Drainage Products, Specialty Items

### MATERIAL SUPPLIERS

**Surface Koatings, Inc.**
134 Davis St.
Portland, TN 37148
**Primary Contact:** Todd Winters
**Phone:** (615) 323-9461
todd.surfkoat@gmail.com
**Products/Services:** Manufacturer of Concrete Coatings, Cures & Seals, Decorative Sealers, Water Repellents, Epoxies & Urethanes
Gate Precast Co.
1 Bluegrass Drive
Ashland City, TN 37015
Primary Contact: Jim Pearson
Phone: (615) 792-4871
jpearson@gateprecast.com
Products/Services: Precast Concrete Systems, Wall Panel, Column Covers & Spandrels

Jarrett Concrete Products Inc.
2012 Hwy 12 S
Ashland City, TN 37015
Primary Contact: Travis Jarrett
Phone: (615) 417-6311
travis.jarrett@jarrettconcreteproducts.com
www.jarrettconcreteproducts.com
Products/Services: Precast Concrete Structures

TRUCKS & EQUIPMENT
Con-Tech Mfg., Inc.
67079 170th Ave.
Dodge Center, MN 55927
Primary Contact: Dean Bungum
Phone: (507) 206-8998
Office: (507) 374-2239
deanb@ctmmixers.com
Products/Services: Manufacturing Concrete Truck Mixers Sales & Parts

McNeilus Truck
PO Box 367
Villa Rica, GA 30180
Primary Contact: Brad Towler
Phone: (770) 459-5151
btowler@mcneilusco.com
Products/Services: Distributor for Trucks and Mixers, Designed for Production & Safety

Terex Advance Mixer
7727 Freedom Way
Fort Wayne, IN 46898
Primary Contact: Scott Kutz
Phone: (330) 204-1079
scott.kutz@terex.com
Products/Services: Front Discharge Ready Mix Trucks, Complete Parts & Field Service Network

TCA Foundation Golf Tournament on September 18th, GREYSTONE GOLF COURSE, Dickson, TN
11:30 Lunch 1:00 p.m. Shotgun Start
This event is our primary source of funding for our Concrete Industry Management scholarship program. TCA was one of the first organizations to offer student scholarships to the CIM program – our TCA (then TRMCA) scholarship program actually began in the last century! Since then, we have provided scholarships to 39 different students with the majority of this funding coming from our annual golf event. The tournament is a Scramble format so everyone can enjoy a day on the links and a wonderful lunch in the clubhouse!

Please complete the registration form online and payment process to participate or be a sponsor: https://form.jotform.com/9199432953166

Player Options
Single Player $150
Team of Four $600

Sponsorship Opportunities
Foundation Golf Beverage Cart Sponsor $400
Foundation Golf Hole Sponsor (Already included in Presenting and Platinum Sponsorships for 2019 and you are encouraged to do a giveaway or contest on your hole and you are welcome to “man” your hole and meet all the players) $200

Foundation PAR 3 Sponsor $300, plus giveaway!
We are requesting a significant (Minimum $5,000 value) giveaway on each Par 3 for the first Hole–N–One on that hole. TCA can help with providing insurance for cash prizes if desired, or you can do on your own. Can be cash, equipment or other items of value.
Par 3 Sponsors will need to man their holes to oversee the Hole–N–One contest (and meet all the players!) We want a Closest–to–the–Pin giveaway on every Par 3. Prize must be worth at least $100 and will be given out at the conclusion of the event. If desired, the Par 3 Sponsor may present their prize at the award ceremony. FYI: Insurance for a $20,000 cash prize will run about $400.
ACOT Associates Group
5796 Shelby Oaks Dr Suite 16A
Memphis, TN 38134
Primary Contact: Daniel Akinduro
Phone: (901) 266-1653
dakinduro@acotassociates.com
www.acot.us.com
Products/Services: Design, Build & Engineering Services

ATC Group Services
2690 Memorial Dr. Ste D
Murfreesboro, TN 37129
Primary Contact: Tim Thomson
Phone: (615) 546-6946
tim.thomson@atcgs.com
www.atcgroupservices.com
Products/Services: Concrete Acceptance Testing/QA, QC, Soil Mechanics, Geotechnical Investigation, Full Lab for Construction Materials Testing

ATC Group Services
3144 Stage Post Dr.
Bartlett, TN 38133
Primary Contact: Dave Schmidt
Phone: (901) 259-2362
dave.schmidt@atcgs.com
www.atcgroupservices.com
Products/Services: Geotechnical & Construction Materials Testing, Monitor Concrete Testing, Fill Placement, Density & Steel Inspection

Barge Design Solutions
615 3rd Ave. South Ste.700
Nashville, TN 37210
Primary Contact: Raymond Canady
Phone: (615) 254-1500
raymond.canady@bargedesign.com
www.bargedesign.com
Products/Services: Architectural & Engineering Services Surveying & Construction Inspection

BFW Engineering & Testing, Inc.
PO Box 120
Paducah, KY 42002
Primary Contact: Keith Brown
Phone: (270) 443-1995
kbrown@bfwengineers.com
www.bfwengineers.com
Products/Services: Construction Materials Testing, Inspections, Civil, Structural, Transportation & Surveying

Building & Earth Sciences, Inc.
5545 Derby Dr.
Memphis, TN 38127
Primary Contact: Trace Higgins
Phone: (901) 645-8008
trace@buildingandearth.com
www.buildingandearth.com
Products/Services: Geotechnical Engineering Services, CMT & Special Inspections

CDM Smith
1100 Marion Street Ste.300
Knoxville, TN 37921
Primary Contact: Jeff Widner
Phone: (865) 963-4300
widnerjm@cdmsmith.com
www.cdmsmith.com
Products/Services: Consulting Engineering Firm

Collier Engineering
5560 Franklin Pike Circle
Brentwood, TN 37027
Primary Contact: Jim Beaudoin
Phone: (615) 294-6109
jim.beaudoin@collierengineering.com
www.collierengineering.com
Products/Services: Consulting Engineering, Geotechnical Engineering & Materials Inspection

Construction Materials Lab, Inc.
PO Box 9449
Knoxville, TN 37920
Primary Contact: Scott Fitzgerald
Phone: (865) 573-6122
sfitzgerald@cmllabtechs.com
www.cmllabtechs.com

Earth Science Engineering, LLC
201 W. Dunbar Cave Rd
Clarksville, TN 37040
Primary Contact: Chris Casteel
Phone: (931) 645-8008
alice@eseng.us
www.eseng.us
Products/Services: Geotechnical Services

ECS Southeast, LLP
318 Seaboard Lane
Franklin, TN 37067
Primary Contact: Mark Luskin
Phone: (615) 885-4983
markluskin@escslimited.com
www.escslimited.com
Products/Services: Engineering Consulting and Testing for Construction Materials, Geotechnical & Environmental, Concrete Coring

Engineering & Testing Solutions
PO Box 6212
Sevierville, TN 37864
Primary Contact: Michael Whaley
Phone: (865) 428-4468
awhaley@ets-tn.com
www.ets-tn.com
Products/Services: Geotechnical & Constructions Materials Testing, Retaining Wall Design, Laboratory testing & drilling

GEO Solutions, LLC
7201 Opportunity Blvd
Huntsville, AL 35810
Primary Contact: Matt Barnes
Phone: (256) 837-6708
mbarnes@geo-solutions.net
www.geo-solutions.net
Products/Services: Engineering Services

GEOServices, LLC
2561 Willow Point Way
Knoxville, TN 37931
Primary Contact: Josh Eslinger
Phone: (865) 539-8242
jymer@geoservicesllc.com
www.geoservicesllc.com
Products/Services: Geotechnical, Construction Materials, Natural Resources Engineering

Geotechnology Inc.
3312 Winbrook Dr.
Memphis, TN 38116
Primary Contact: Justin Donovan
Phone: (901) 353-1981
jdonovan@geotechnology.com
www.geotechnology.com
Products/Services: Engineering Services, Construction Materials Testing & Special Inspections

Geotek Engineering Co.
2909 Elizabeth St.
Nashville, TN 37211
Primary Contact: Rami Mishu
Phone: (615) 833-3800
cmulloy@geotektn.com
www.geotektn.com
Products/Services: Geotechnical Engineering and Construction Materials Testing
Goodwyn, Mills & Cawood, Inc.
3310 West End Ave.
Nashville, TN 37203
Primary Contact: Kevin Wales
Phone: (615) 333-7200
kevin.wales@gmcnetwork.com
www.gmnetwork.com
Products/Services:
Geotechnical, Construction
Materials Testing, Architecture, Engineering, Environmental, Transportation

HDR Inc.
4645 Village Square Dr.
Paducah, KY 42001
Primary Contact: D. Michael Gragg
Phone: (270) 444-9691
kevin.walker@hdrinc.com
www.hdrinc.com
Products/Services:
Construction Materials Testing, Geotechnical Engineering, Environmental, USACE Validated, AASHTO, AMRL, CCRL

Intertek-PSI Inc.
751 South 5th St.
Nashville, TN 37206
Primary Contact: Ted Kisselovich
Phone: (615) 244-8990
tony.thomas@psiusa.com
www.psiusa.com
Products/Services: ASHHTO Certified Laboratory, ARML (ASTM E329), ACI, ASNT, CWI

K.S. Ware & Associates LLC
54 Lindsley Ave.
Nashville, TN 37210
Primary Contact: Julie Oliphant
Phone: (615) 255-9702
joliphant@kswarellc.com
www.kswarellc.com
Products/Services: Concrete, Asphalt, and Aggregate Testing

Patriot Eng & Environmental, Inc.
6150 East 75th St.
Indianapolis, IN 46250
Primary Contact: J. Trotter
Phone: (615) 528-4441
jtrotter@patrioteng.com
www.patrioteng.com
Products/Services:
Construction Materials Testing, Geotechnical Engineering, Environmental, USACE Validated, AASHTO, AMRL, CCRL

Professional Engineers, Inc.
127G Perimeter Park Rd.
Knoxville, TN 37922
Primary Contact: David K. Berry
Phone: (865) 690-8262
david.berry@proengineersinc.com
www.geotechnical-engineers.com
Products/Services: Field & Laboratory Testing of Concrete, Grout & Mortar

Professional Engineers, Inc.
127G Perimeter Park Rd.
Knoxville, TN 37922
Primary Contact: Kenny Freer
Phone: (615) 244-8591
kfreer@ragansmith.com
www.ragansmith.com
Products/Services:
Transportation Engineering, Civil Eng., Surveying, Landscape Architecture & Construction Services

Ragan-Smith Associates, Inc.
PO Box 60070
Nashville, TN 38206
Primary Contact: Steve Lane
Phone: (615) 333-0630
slane@ssr-inc.com
www.ssr-inc.com
Products/Services:
Engineering Services to Private & Public Entities, Pervious Certified

Ross Bryan Associates, Inc.
227 French Landing Dr. Ste.500
Nashville, TN 37228
Primary Contact: Michael Paris
Phone: (615) 329-1300
paris@rossbryan.com
www.rossbryan.com
Products/Services: Structural Engineering

S&M, Inc.
1413 Topside Road
Louisville, TN 37777
Primary Contact: John Pearson
Phone: (865) 970-0003
jpearson@smeinc.com
www.smeinc.com
Products/Services: Concrete Testing, Soil & Rock Testing, Aggregate Testing, Construction Monitoring Services, Geotechnical Engineering

Shield Engineering
300 Forestal Dr.
Knoxville, TN 37918
Primary Contact: Ray Tant
Phone: (865) 544-5959
Fax: (865) 544-5885
rtant@shieldengineering.com
www.shieldengineering.com
Products/Services: Engineering Consulting & Materials Testing

Smith Seckman Reid, Inc.
2995 Sidco Dr.
Nashville, TN 37204
Primary Contact: Ray Tant
Phone: (865) 333-1113
slane@ssr-inc.com
www.ssr-inc.com
Products/Services:
Engineering Services to Private & Public Entities, Pervious Certified

Smith Seckman Reid, Inc.
2995 Sidco Dr.
Nashville, TN 37204
Primary Contact: Steve Lane
Phone: (615) 383-1113
slane@ssr-inc.com
www.ssr-inc.com
Products/Services:
Engineering Services to Private & Public Entities, Pervious Certified

Terracon Consultants, Inc.
5217 Linbar Drive
Nashville, TN 37211
Primary Contact: Nick Fuller
Phone: (615) 333-6444
nick.fuller@teraconconsultants.com
www.teracon.com
Products/Services:
Construction Materials Testing (ACI, ICC, PTI), Geo-technical Engineering & Enviromental Consulting Services

Thompson Engineering, Inc.
630 Chestnut St.
Chattanooga, TN 37402
Primary Contact: Randy Brown
Phone: (423) 756-7970
rbrown@thompsonengineering.com
www.thompsonengineering.com
Products/Services: Consulting, Inspection, Geotech, Materials Testing, Civil Engineering

Volkert Inc.
1428 Chestnut St.
Chattanooga, TN 37402
Primary Contact: Jim Floyd
Phone: (423) 842-3335
jimfloyd@volkert.com
www.volkert.com
Products/Services:
Engineering, Surveying and Construction Engineering and Inspection (CEI)

Wood Environmental & Inf.
3800 Ezell Rd.
Nashville, TN 37211
Primary Contact: Leslie Alderman
Phone: (615) 333-0630
leslie.alderman@woodplc.com
www.woodplc.com
Products/Services: Engineering Services
Advantage Const. Services
1208 Hwy 47 E
Dickson, TN 37055
Primary Contact: Trent Smith
Phone: (615) 740-8777
trentacs@comcast.net
www.advantageconst.net
Products/Services: Segmental Retaining Walls- Design Performed In House

American Constructors, Inc.
PO Box 120129
Nashville, TN 37212
Primary Contact: John Madole
Phone: (615) 329-0123
johnm@americanconstructors.us
www.amconst.com

Baker’s Construction Services, Inc.
PO Box 417
Piney Flats, TN 37686
Primary Contact: Kevin Buck
Phone: (423) 538-4400
kb@bakersconstructionservices.com
www.contactbcs.com
Products/Services: Site Construction, Utilities, Site Concrete, Curb & Gutter, Site Construction Oversight

Baltz & Sons Concrete
10505 US Hwy 64 Ste.1
Arlington, TN 38002
Primary Contact: Kevin Baltz
Phone: (901) 465-4337
kevin@baltzconcrete.com
www.baltzconcrete.com
Products/Services: Decorative & Stamped Concrete, Pervious Concrete, Patios, Driveways, Pool Decks

Beech Construction
541B Huntley Industrial Dr.
Smyrna, TN 37167
Primary Contact: Camden Griffin
Phone: (615) 220-5335
camdengriffin@beech-construction.com
www.beech-construction.com
Products/Services: General Contracting, Concrete Contracting, Structural Concrete & Pervious Concrete

Bell & Associates
PO Box 363
Brentwood, TN 37024
Primary Contact: Darek Bell
Phone: (615) 373-4343
eoogoodwin@balp.com
www.balp.com
Products/Services: Tilt-up, General Contracting, Bridges, Parking Garages

BHS Concrete, LLC
860 Vaughn Rd
Memphis, TN 38122
Primary Contact: Joe Brannon
Phone: (901) 603-9997
josephbrannon@comcast.net
www.bhsconcrete.com/
Products/Services: Form & Place Concrete Foundations, Slabs, Flatwork, Walls, Decks & Driveways

BLS Concrete
PO Box 4051
Cleveland, TN 37320
Primary Contact: Sherrill Black
Phone: (423) 476-7278
sadmbl@aol.com
www.commercialconcretetn.net/
Products/Services: Industrial & Commercial Concrete, Excavate, Flatwork, TDOT Curbing, & Walls

Blount Contractors, Inc.
3025 Northpark Blvd.
Alcoa, TN 37701
Primary Contact: William Hall
Phone: (865) 981-9990
wchall@blountcontractors.com
www.blountcontractors.com
Products/Services: Full Service Concrete Contractor

BurWil Construction Co.
PO Box 637
Bristol, TN 37621
Primary Contact: Nick Self
Phone: (423) 968-4158
nself@burwil.com
www.burwil.com
Products/Services: Concrete Services

Charles Goar Concrete
1673 Newport Place
LaVergne, TN 37086
Primary Contact: Charles Goar
Phone: (615) 459-9003
allengoar@gmail.com
Products/Services: Form carpentry, Pour in Place, Commercial & TDOT Roadwork

Charles Watkins & Co.
1706 Industrial Loop Rd
Pulaski, TN 38478
Primary Contact: Charles Watkins
Phone: (931) 309-2039
charleswatkinsandcompany@gmail.com
Products/Services: Retaining Walls, Box Culverts, Span Bridges, Pipe in Walls, ACI Certified Flatwork

Charter Construction Inc.
PO Box 90970
Nashville, TN 37209
Primary Contact: Turner Talley
Phone: (615) 383-8464
turner@charterconstruction.com
www.charterconstruction.com
Products/Services: Concrete Subcontractor, Tilt-Up & Commercial

Dempster Poured Foundations
PO Box 11331
Knoxville, TN 37939
Primary Contact: Ross Dempster
Phone: (865) 755-0869
ross@dpfconcrete.com
www.dempsterpouredfoundations.com
Products/Services: Poured In Place Walls, Follow Us On Instagram Dempster Poured Foundations LLC

Denham-Blythe Co., Inc.
855 Springfield Hwy Ste.101
Goodlettsville, TN 37072
Primary Contact: Vance Hohn
Phone: (615) 855-2244
vhohn@denhamblythe.com
www.denhamblythe.com
Products/Services: Design-Build Building Construction Services to Industrial, Institutional & Commercial Facilities

Dusty & Sons Concrete, LLC
2478 Greens Mill Rd.
Columbia, TN 38401
Primary Contact: Josh Cornell
Phone: (615) 473-0123
joshcornwell@yahoo.com
www.dustysandsonsconcrete.com
Products/Services: Poured Concrete Walls, Stamping & Staining Decorative Concrete, Driveways, Slabs, Flatwork & Pervious

Fulmer Concrete Finishing Co. Inc.
4845 Gemini Dr.
Chattanooga, TN 37416
Primary Contact: Andrew Faw
Phone: (423) 855-1551
andrew@fulcon.com
www.fullerconcrete.com
Products/Services: Commercial & Industrial Concrete Contractor, Elevated Structures, Concrete Walls, Foundations & Slabs

Flintco, Inc.
2179 Hillshire Circle
Memphis, TN 38133
Primary Contact: Danny Moeischle
Phone: (901) 612-2850
dmoeischle@flintco.com
www.flintco.com
Products/Services: Flintco is a construction manager specializing in large commercial construction & self-perform portions of all concrete scope of work.
Glenn E. Mitchell & Co., Inc.  
3583 Louisville Road  
Louisville, TN 37777  
**Primary Contact:** Andy Mitchell  
**Phone:** (615) 588-5135  
andy@gemitchellco.com  
www.gemconcrete.com  
**Products/Services:** Foundations, Formed Walls, Fine Grading, Laser-Screening, Place & Finish Slabs, Structural Concrete, Pervious & Tilt Walls

Hawkins Asphalt Paving, LLC  
PO Box 292  
Wartrace, TN 37883  
**Primary Contact:** Chris V. Hawkins  
**Phone:** (931) 389-9671  
chris@hawkinspaving.com  
www.hawkinspaving.com  
**Products/Services:** Paving of City Streets, Curbing, Excavation, Driveways & Pervious Concrete

HR Concrete Solutions, LLC  
906 East Parkway Ste.2  
Gatlinburg, TN 37738  
**Primary Contact:** James Reeves  
**Phone:** (865) 335-2346  
James@HR-Concrete.com  
www.hrconcreteco.com  
**Products/Services:** CIP Concrete, Decorative Concrete, Footings & Foundations, Flatwork, All Concrete Applications & Concrete Walls

JAY-TON Construction Co.  
PO Box 142  
Burlison, TN 38015  
**Primary Contact:** Chase Sellers  
**Phone:** (901) 476-1487  
csellers@jay-ton.com  
www.jay-ton.com  
**Products/Services:** Commercial Concrete Placement for Manufacturing, Energy Facilities, Distribution Centers & Warehouses

Jenkins & Jenkins, Inc.  
PO Box 182  
Centerville, TN 37033  
**Primary Contact:** Ken Jenkins  
**Phone:** (931) 729-3056  
jenkinsjenkinsco@bellsouth.net

Jinks Concrete Contractors Inc.  
184 Roy Rd  
Sweetwater, TN 37874  
**Primary Contact:** JoAnna Jinks  
**Phone:** (423) 337-0073  
jinks@jinksconcrete.com  
www.jinksconcrete.com  
**Products/Services:** Concrete Finishers, Pervious Concrete, Decorative Concrete, Curbs, Retaining Walls

JR Construction Tennessee, Inc.  
4957 Drakes Branch Road  
Nashville, TN 37218  
**Primary Contact:** Patricia Robertson  
**Phone:** (615) 876-2247  
jrcrcrete@aol.com  
www.jrcrconstructiontn.com/  
**Products/Services:** General Contractor Concrete Installer

KCS Construction, LLC  
PO Box 1939  
Columbia, TN 38402  
**Primary Contact:** Wade Kincaid  
**Phone:** (931) 490-9782  
wade@kcslc.com  
www.kcsllc.com  
**Products/Services:** Residential & Commercial Concrete, Concrete Subcontractor For All Size Home Builders, Pervious Certified

L.E. Myers Co.  
401 Chestnut Street Ste.120  
Chattanooga, TN 37402  
**Primary Contact:** Tod Cooper  
**Phone:** (423) 265-4441  
tcooper@myrgroup.com  
www.thelemyersco.com  
**Products/Services:** Place Foundations for Substations & Transmission Line Projects

Lamply Construction Inc.  
PO Box 696  
Fairview, TN 37062  
**Primary Contact:** Leonard Lamply  
**Phone:** (615) 799-2088  
sllamply@bellsouth.net  
**Products/Services:** Concrete Services, Commercial & Industrial

Lithko Contracting Inc.  
359 Mason Rd.  
LaVergne, TN 37086  
**Primary Contact:** Chris Dittman  
**Phone:** (615) 834-8773  
dittman@lithko.com  
www.lithko.com  
**Products/Services:** Total Package Concrete Contractor

MarCar Construction, Inc.  
922 Harpeth Valley Place  
Nashville, TN 37221  
**Primary Contact:** Kyle Bowers  
**Phone:** (615) 673-9950  
kyle@marcorconstruction.com  
www.marcorconstruction.com  
**Products/Services:** Concrete Curb & Gutters, Sidewalks, Pervious Concrete, & Misc Concrete Work

Murali Construction Inc.  
PO Box 150  
Milan, TN 38358  
**Primary Contact:** Bill Smith  
**Phone:** (731) 695-5663  
bill@msite-inc.com  
**Products/Services:** General Contractor Specializing in Downtown Improvement Projects, Certified Pervious Installer

Southern Constructors, Inc.  
PO Box 9476  
Knoxville, TN 37940  
**Primary Contact:** Richard Huskey  
**Phone:** (865) 579-5351  
rhuskey@southernconstructorsinc.com  
www.southernconstructorsinc.com  
**Products/Services:** General Contractor Specializing in Infrastructure- Water & Wastewater Plants, Pump Stations, Bridge Repairs, Commercial & Industrial Bldgs

Turner Construction Co.  
624 Grassmere Park #4  
Nashville, TN 37211  
**Primary Contact:** Rob A. Binford  
**Phone:** (615) 231-6300  
rob@tcco.com  
www.turnerconstruction.com  
**Products/Services:** General Contractor Concrete Installer

Vintage Resurfacing  
915 Dove Lane  
Murfreesboro, TN 37128  
**Primary Contact:** Larry Pippin  
**Phone:** (615) 586-2790  
larry@vintageresurfacing.com  
www.vintageresurfacing.com  
**Products/Services:** Decorative Concrete Services, Resurfacing, Polishing, Commercial & Residential

Walland Services, LLC  
PO Box 295  
Rockvale, TN 37153  
**Primary Contact:** Tony Sutherland  
**Phone:** (615) 772-8212  
wallandservices@gmail.com  
**Products/Services:** Construction Company Specializing In Water & Sewer Utilities & Concrete

Tennessee Hardscapes  
4961 Island Home Rd  
Louisville, TN 37777  
**Primary Contact:** Richard Angel  
**Phone:** (931) 316-2899  
Tennesseehardscapes2@gmail.com

Trinity Builders, Inc.  
1841 Heritage Park Plaza#2  
Murfreesboro, TN 37129  
**Primary Contact:** Thomas Bondurant  
**Phone:** (615) 394-8832  
bondy@att.net  
**Products/Services:** General Contractor Concrete Installer
Further, we appreciate the financial support of the TTU Department of Civil and Environmental Engineering.

Finally, the authors appreciate the administrative, financial and information technology support provided by the TTU Center for Energy Systems Research, particularly Dr. Satish Mahajan, Tony Greenway, Robert Craven, Etter Staggs, and Linda Lee.

**AUTHOR INFORMATION**

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James Locum, M.S., E.I. is a civil engineering doctoral student at Tennessee Technological University.

Daniel Badoe, Ph.D. is a professor of Civil Engineering at Tennessee Technological University.

Heather P. Hall, P.E. is Assistant Engineering Director of TDOT Materials and Tests Division.

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**TABLE 10. COST ASSUMPTIONS**

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>ASSUMED COST FOR READY MIX PRODUCER</th>
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<tbody>
<tr>
<td>Type I PC, ($/ton)</td>
<td>$110.00</td>
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<tr>
<td>Class F Fly Ash, ($/ton)</td>
<td>$30.00</td>
</tr>
<tr>
<td>Class C Fly Ash, ($/ton)</td>
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<tr>
<td>Grade 120 Slag, ($/ton)</td>
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<tr>
<td>Silica Fume, ($/ton)</td>
<td>$1,000.00*</td>
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<tr>
<td>Metakaolin, ($/ton)</td>
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<tr>
<td>No. 57 Limestone, ($/ton)</td>
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<td>River Sand, ($/ton)</td>
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<tr>
<td>Air Entrainer, ($/gallon)</td>
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<tr>
<td>Mid-Range Water Reducer, ($/gallon)</td>
<td>$8.50</td>
</tr>
<tr>
<td>High-Range Water Reduced, ($/gallon)</td>
<td>$12.00</td>
</tr>
</tbody>
</table>

*Plus freight

---

So much of what TCA does throughout the year does NOT come in one of these mailers. From classes to information about special events and opportunities, if you aren’t signed up for our Member Update, you aren’t getting the whole picture of what TCA can offer you!

Help us today make sure YOU are getting all the news by emailing Donna Thompson at donna@tnconcrete.org to get started receiving the Member Update each week. And think about signing up your employees as well! All we need is their name and email address.
TCA Member Healthcare Plan is Here and OPEN To YOU & Your Employees!

Stop by our website to see what TCA can offer you and all your employees—it won’t cost you a thing but could save you up to 60% on healthcare costs!

TCA is using this plan to provide coverage for our staff and it's worth your time to check it out.

TCA's Member Healthcare Plan, in partnership with the Small Association Leadership Alliance (SALA), is a comprehensive and cost-effective alternative to traditional plans. This new program offers affordable, accessible, and effective healthcare options for our members – both businesses and individuals alike. The TCA Member Healthcare Plan provides a high-quality, affordable healthcare solution for employers, employees and sole-proprietors. While not health insurance, the program provides 100% coverage for preventative care, options for co-payment features with 100% coverage, and addresses unforeseen medical expenses, such as illness and injury.

This program is not insurance. It is an alternative solution that features a choice of two preventative care plans, each coupled with a medical cost sharing membership for sharing expenses related to unexpected medical needs. Participants can expect to save as much as 60% when compared to health insurance!

The TCA Member Healthcare Plan, in partnership with SALA, is one solution to the high cost of healthcare for our TCA members!

Key Takeaways:
• Available to businesses AND individuals
• Available to full-time, part-time and seasonal staff
• The TCA's Member Healthcare Plan, provided by SALA, lowers healthcare costs by as much as 60%
• Enrollment is monthly – you may join at any time
• Offers a choice of two high-quality, affordable healthcare solutions
• Includes a four (4) year “Rate Lock” on preventative plans – offering rate stability in a very unstable market

There will be an informational Webinar on September 12th at 8 a.m. CST at: https://zoom.us/j/848699075!
Learn more now on our website at: https://www.tnconcrete.org/tca-member-health-insurance-plan
UNDERGRADUATE JOB OUTLOOK: 2018-2019 IS STILL HOLDING STRONG!

• CIM continues to outpace the newly joined Construction Management major within the School of Concrete and Construction at MTSU with the highest enrollment, most students graduating annually, most students relocating for jobs, and the highest starting salary!
• Average salary for CIM has increased over 25 percent in the last five years, from $45,347 in 2014-15 to almost $58,000 this academic year.
• Employer involvement in the School remains a strength in the program, with 141 employer visits to campus to recruit this academic year!

NEW SCHOOL OF CCM BUILDING

The new building for the School of Concrete and Construction on MTSU’s southeastern corner of campus has been officially approved by the Governor and state legislature and is now beginning the planning phase. This summer the bid process will begin to obtain an architect and general contractor. The hope is to demolish the two vacated dorms on the jobsite in the fall to stay on a projected 24-month construction schedule developed by MTSU Campus Planning.

CIM PATRON’S SPRING MEETING AND JIM SPEAKMAN MEMORIAL GOLF TOURNAMENT

This year, CIM was determined to grow their largest annual fundraiser, and made the annual golf tournament only for CIM affiliated companies with the focus on employers of alumni. Now able to see past the building seed money, the goal was to make adjustments to the tournament that would result in sustainable annual funds with a focus on scholarships.

The Patron’s group heard the call and had the most successful tournament ever with $108,140 raised! Price increases for a foursome, a record number of teams registered (54 total teams over two flights!) and a few cuts to costs helped to make this year a new baseline for fundraising annually. Patron’s plan to take a similar strategy with their fall efforts and voted to double the capacity of the fall Skeet Shoot to allow for growth.

<table>
<thead>
<tr>
<th>MAJOR</th>
<th>CONCENTRATION</th>
<th>2018-19 GRADS</th>
<th>OUT OF TN</th>
<th>AVERAGE SALARY</th>
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<td>Production, Sales &amp; Service</td>
<td>31</td>
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<td></td>
<td>Concrete Contracting</td>
<td>18</td>
<td>4</td>
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<td>Total</td>
<td>49</td>
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<td>Construction Management</td>
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<td>Electrical</td>
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<td>—</td>
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<tr>
<td></td>
<td>Residential</td>
<td>19</td>
<td>1</td>
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<td></td>
<td>Total</td>
<td>43</td>
<td>1</td>
<td>$56,992</td>
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<tr>
<td>Total CCM</td>
<td></td>
<td>92</td>
<td>16</td>
<td>$57,631</td>
</tr>
</tbody>
</table>

EMPLOYERS OF 2018-19 GRADUATES

- American Geothermal
- Argos x 2 (GA and SC)
- Boyce Ballard Construction
- Capital Project Solutions
- Cemex x 3 (FL)
- Command Alkon (AL)
- D.F. Chase Construction
- Delta Industries
- Doster Construction x 2
- Encon United (CO)
- Geoservices, LLC
- Goodall Homes
- Irving Materials, Inc. (imi)
- Kenny Pipe
- Kiewit x 2
- Lithko Contracting
- Marking Impressions
- Messer Construction
- Metromont (NC)
- Missoula Concrete Const (MT)
- Nashville Ready Mix
- National Ready Mix Concrete Company
- Prairie Materials
- Preferred Materials
- PSI
- Robins & Morton
- Sequatchie Concrete
- Sherman Industries
- Southern Building Group
- The Concrete Guys
- Turner Construction
- Wayne Brothers x 2
- Wirtgen America
- Zachry Construction
STUDY ABROAD IN ENGLAND

The School of Concrete and Construction traveled for the fourth time to Constructionarium, the National Construction College in Birchem Newton, England. Twelve Concrete Industry Management and three Construction Management majors traveled with Mr. Jon Huddleston and Dr. Marcus Knight, CIM faculty. Students flew into London, toured the sights and traveled into the country to Birchem Newton. There, the students are divided into job functions, given titles, live in dorms, and work from sunup to sundown for five days to complete a scaled-down replica of an actual structure in England. This year the group completed the Brewery Wharf Footbridge while making friends and memories with their peers.
Systems & Controls

Concrete Plants
Radial Stackers
Tress Conveyors
Batch Computers
Dust Collectors
Binfill Systems
Water Meters
Moisture Probes
Aeration Blowers
Valves
Cylinders
Silo Level
Calibration Services

CONCRETE PLANT SALES, SERVICE, PARTS AND CERTIFICATION

Systems & Controls
11450 Shaw Ferry Road
Lenoir City TN
37772

Phone: 615-933-8583
Fax: 615-933-0397
Mobile: 965-250-8855
E-mail: concreteequipment@gmail.com

www.systemsandcontrols.net