

**Design and Control of Concrete Mixtures**  
**October 14-17, 2019**

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Monday, October 14

8:00	<b>WELCOME To PCA and CTL</b>	Michelle Wilson <b>PCA</b>
8:30	FUNDAMENTALS OF CONCRETE <ul style="list-style-type: none"> <li>• Materials Selection</li> <li>• Fresh &amp; Hardened Concrete Properties</li> </ul>	Michelle Wilson
9:00	CEMENTITIOUS MATERIALS <ul style="list-style-type: none"> <li>• Portland Cement</li> <li>• SCMs</li> </ul>	Michelle Wilson
10:30	<b>BREAK</b>	
10:45	AGGREGATES <ul style="list-style-type: none"> <li>• ASTM C33 (CSA A23.1)</li> <li>• Characteristics of Aggregates</li> <li>• Grading</li> </ul>	George Seegebrecht <b>CCE</b>
12:00	<b>LUNCH</b>	
1:00	CHEMICAL ADMIXTURES <ul style="list-style-type: none"> <li>• Air Entrainment</li> <li>• Water Reducers &amp; Super-plasticizers</li> <li>• Set Modifying Admixture</li> <li>• Specialty Admixtures</li> </ul>	Michelle Wilson
2:00	SKIN SAFETY W/ CEMENT & CONCRETE <ul style="list-style-type: none"> <li>• Safety Video</li> </ul>	
2:30	<b>BREAK</b>	
2:45	LABORATORY EXERCISE <ul style="list-style-type: none"> <li>• Use of Chemical Admixtures</li> <li>• Use of SCMs</li> <li>• Use of Fibers</li> </ul>	Michelle Wilson/ Jeff Pyc <b>CTLGroup</b>
4:30	<b>EVALUATION &amp; ADJOURN</b>	



***Design and Control of Concrete***

***Mixtures*** Tuesday, October 15

8:00	BATCHING, MIXING, & TRANSPORTING & HANDLING CONCRETE <ul style="list-style-type: none"><li>• Checklist for Concrete Placement</li><li>• Delivery Considerations</li><li>• Placing Equipment</li><li>• Vibration &amp; Consolidation</li></ul>	Michelle Wilson
8:45	PLACING AND FINISHING CONCRETE <ul style="list-style-type: none"><li>• Finishing Methods</li><li>• Jointing Procedures</li></ul>	George Seegebrecht
10:00	<b><i>BREAK</i></b>	
10:15	CURING <ul style="list-style-type: none"><li>• Methods &amp; Materials</li><li>• Period &amp; Temperature</li></ul>	George Seegebrecht
11:00	<b><i>TOUR OF CTLGROUP</i></b>	
12:00	<b><i>LUNCH</i></b>	
1:00	CONTROL TESTS FOR CONCRETE <ul style="list-style-type: none"><li>• Demonstration- Fresh Concrete Tests- -Slump, Air, Unit Weight, Temperature</li></ul>	George Seegebrecht/ Jeff Pyc
2:30	<b><i>BREAK</i></b>	
2:45	HOT & COLD WEATHER CONCRETING <ul style="list-style-type: none"><li>• Effects of High Concrete Temperatures</li><li>• Cooling Concrete Materials</li><li>• Effect of Freezing on Fresh Concrete, Maturity Method</li><li>• Strength Gain of Low Temperature Concrete</li></ul>	George Seegebrecht
3:45	VOLUME CHANGES OF CONCRETE <ul style="list-style-type: none"><li>• Early Age Volume Changes</li><li>• Moisture Changes (Drying Shrinkage)</li><li>• Thermal Changes</li><li>• Curling (Warping)</li><li>• Elastic and Inelastic Deformation</li><li>• Chemical Changes and Effects</li></ul>	Michelle Wilson
4:30	<b><i>EVALUATION &amp; ADJOURN</i></b>	



***Design and Control of Concrete***

***Mixtures*** Wednesday, October 16

8:00	HIGH-PERFORMANCE CONCRETE •Reinforced Concrete • High-Early • High-Strength • High-Durability	Michelle Wilson
10:00	<b><i>BREAK</i></b>	
10:15	DESIGNING CONCRETE MIXTURES • Factors to Be Considered • Selecting Mix Characteristics	Michelle Wilson
12:00	<b><i>LUNCH</i></b>	
1:00	PROPORTIONING CONCRETE MIXTURES • Absolute Volume Procedure • Group Projects	
2:45	BREAK	
3:00	PROPORTIONING CONCRETE MIXTURES (Cont.) • Laboratory	
4:30	<b><i>EVALUATION &amp; ADJOURN</i></b>	



***Design and Control of Concrete Mixtures***

Thursday, October 17

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| 8:00  | OTHER TYPES OF CONCRETE   | George Seegebrecht                     |
|       | <ul style="list-style-type: none"><li>• Flowable Fill (CLSM)</li><li>• Soil Cement</li><li>• Roller Compacted Concrete (RCC)</li><li>• Pervious Pavement</li><li>• Shotcrete</li><li>• Lightweight Cellular Concrete</li><li>• Self-Consolidating Concrete (SCC)</li><li>• Ultra-High Performance Concrete (UHPC)</li><li>• Self-Cleaning Concrete</li><li>• Translucent Concrete</li><li>• 3D Printing</li></ul> |  |
| 10:00 | <b><i>BREAK</i></b>   |  |
| 10:15 | BREAK-OUT SESSION   | Michelle Wilson/<br>George Seegebrecht |
|       | <ul style="list-style-type: none"><li>• What Have We Learned??</li></ul>  |  |
| 11:15 | CLOSING REMARKS   |  |
| 11:30 | <b><i>EVALUATION &amp; ADJOURN</i></b>  |  |