

Design and Control of Concrete Mixtures
October 10-13, 2022

Monday, October 10

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



Design and Control of Concrete Mixtures

Tuesday, October 11

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



Design and Control of Concrete Mixtures

Wednesday, October 12

- | | | |
|-------|---|--------------------|
| 8:00 | HIGH-PERFORMANCE CONCRETE <ul style="list-style-type: none">• Reinforced Concrete<ul style="list-style-type: none">• High-Early• High-Strength• High-Durability | Colin Lobo |
| 10:00 | <i>BREAK</i> | |
| 10:15 | DESIGNING CONCRETE MIXTURES <ul style="list-style-type: none">• Factors to Be Considered• Selecting Mix Characteristics | Michelle Wilson |
| 12:00 | <i>LUNCH</i> | |
| 1:00 | PROPORTIONING CONCRETE MIXTURES <ul style="list-style-type: none">• Absolute Volume Procedure• Group Projects | @NRMCA Labs |
| 2:45 | BREAK | |
| 3:00 | PROPORTIONING CONCRETE MIXTURES (Cont.) <ul style="list-style-type: none">• Laboratory | |
| 4:30 | <i>EVALUATION & ADJOURN</i> | |



Design and Control of Concrete Mixtures

Thursday, October 13

8:00	INNOVATIONS IN CONCRETE TECHNOLOGY	Michelle Wilson
	<ul style="list-style-type: none">• Translucent Concrete• Photocatalytic (Self-Cleaning)• Engineered Cementitious Composites (Bendable Concrete)• Self-Healing Concrete• Additive Manufacturing (3D Printing)• Geosynthetic Composites• Robotics• Drones• Artificial Intelligence (AI)• Virtual Cement Hydration• Nanotechnology• Lunar Concrete	
10:00	<i>BREAK</i>	
10:15	BREAK-OUT SESSION	Review Panel
	<ul style="list-style-type: none">• What Have We Learned??	
11:15	CLOSING REMARKS	
11:30	<i>EVALUATION & ADJOURN</i>	