



Shotcrete Short Course

Design | Materials | Equipment | Construction | QA/QC

September 9-11, 2019 | Argo Gold Mine and Mill | Idaho Springs, Colorado

TECHNICAL PROGRAM, DEMONSTRATION and CERTIFICATION SCHEDULE*

Note: Some locations have changed. Please view the schedule carefully.

DAY 1

Monday, September 9, 2019

All functions for this day will take place at the following address, unless noted:

TommyKnocker

1401 Miner Street, Idaho Springs, Colorado 80452

Phone: (303) 567-2688

7:00 a.m.-7:30 a.m.

Course Registration
Networking Breakfast
Moderator/Speaker Technical Rehearsal

7:30 a.m.-7:45 a.m.

Welcome and Introduction
Theresa Engler, *DFI Executive Director*
Dr. Raymond Henn, *RW Henn, LLC*

7:45 a.m.-8:00 a.m.

An Overview of the Underground Construction Association
Underground Construction Association (UCA) of the Society for Mining, Metallurgy, and Exploration (SME)

8:00 a.m.-8:45 a.m.

Mix Design
Dr. John Zhang, *LZhang Consulting & Testing Ltd*

8:45 a.m.-9:30 a.m.

Chemical Admixtures for Design and High-Performance Sprayed Concrete Mixes
Jim Lindsay, *BASF*

9:30 a.m.-10:15 a.m.

Reinforcement-Fibers and Mesh
Kurt Braun, *L-7 Services LLC*

10:15 a.m.-10:30 a.m.

Networking Coffee Break

10:30 a.m.-11:15 a.m.

Materials Handling and Storage
Dr. John Zhang, *LZhang Consulting & Testing Ltd*

11:15 a.m.-11:45 a.m.	QA/QC Dr. John Zhang, <i>LZhang Consulting & Testing Ltd</i>
11:45 a.m.-12:30 p.m.	Networking Lunch
12:30 p.m.-1:15 p.m.	Specifications for Shotcrete Dan Millette, B.Eng, MBA, <i>MacLean Engineering</i>
1:15 p.m.-2:00 p.m.	Pre-Construction Testing and Qualification Dr. John Zhang, <i>LZhang Consulting & Testing Ltd</i>
2:00 p.m.-2:45 p.m.	Placing and Auxiliary Equipment Carl Bauer; <i>Minova USA Inc.</i>
2:45 p.m.-3:00 p.m.	Networking Coffee Break
3:00 p.m.-3:45 p.m.	Terms, Definitions and Requirements for a Shotcrete Submittal Axel G. Nitschke, Ph.D., P.E., <i>WSP</i>
3:45 p.m.-4:30 p.m.	Case History - Laronde Mine Dan Millette, B.Eng, MBA, <i>MacLean Engineering</i>
4:30 p.m.-5:15 p.m.	Case History - Civil Underground Project Norbert Fuegenschuh, <i>BeMo</i>
5:15 p.m.-5:30 p.m.	Discussion and Questions All
5:45 p.m.-7:00 p.m.	<i>ARGO Tunnel and Mill Tour</i> <i>2350 Riverside Drive</i> <i>Idaho Springs, Colorado 80452</i> <i>Phone: (303) 567-2421</i>
7:00 p.m.-8:15 p.m.	Networking Reception at ARGO Mill <i>sponsored by Shotcrete Technologies</i>

-see next page for DAY 2-

DAY 2
Tuesday, September 10, 2019

All functions for this day will take place at the following address, unless noted:

TommyKnocker
1401 Miner Street, Idaho Springs, Colorado 80452
Phone: (303) 567-2688

7:00 a.m.-7:30 a.m.	Course Registration Networking Breakfast Moderator/Speaker Technical Rehearsal
7:30 a.m.-8:15 a.m.	Finishing and Curing Dr. John Zhang, <i>LZhang Consulting & Testing Ltd</i>
8:15 a.m.-9:00 a.m.	Surface Preparation and Water Control Warren Harrison, <i>Ret.</i>
9:00 a.m.-9:30 a.m.	Nozzleman Training Dr. John Zhang, <i>LZhang Consulting & Testing Ltd</i> Dan Millette, B.Eng, MBA, <i>MacLean Engineering</i>
9:30 a.m.-10:15 a.m.	Networking Coffee Break
10:15 a.m.-11:00 a.m.	Wet Mix Shotcrete Application Dan Millette, B.Eng, MBA, <i>MacLean Engineering</i>
11:00 a.m.- 11:30 a.m.	Wet-Mix and Dry-Mix Shotcrete Repair Warren Harrison, <i>Ret.</i>
11:30 a.m. - Noon	Lattice Girders Andrew King, <i>DSI Tunneling LLC</i>
Noon-12:45 p.m.	Networking Lunch
12:45 p.m.-1:30 p.m.	Construction Acceptance and Inspection Dr. John Zhang, <i>LZhang Consulting & Testing Ltd</i>
1:30 p.m.-2:15 p.m.	Safety Warren Harrison, <i>Ret.</i> Dan Millette, B.Eng, MBA, <i>MacLean Engineering</i>
2:15 p.m.-2:45 p.m.	Measurement and Payment Dan Duche, <i>Meridiam Partners</i>
2:45 p.m.-3:00 p.m.	Networking Coffee Break
3:00 p.m.-3:45 p.m.	Civil Underground Case History Paul Madsen, <i>Kiewit</i>

- 3:45 p.m.-4:30 p.m. **Mining Case History – Shaft Linings for Pan American Silver and Rio Tinto**
Kristian Loevlie, *Shotcrete Technologies, Inc.*
- 4:30 p.m.-4:45 p.m. **Discussion and Questions**
All
- 4:45 p.m.-5:30 p.m. **Spraymec Simulator**
Jim Cammenga, *NORMET Americas*
- 5:30 p.m.-5:45 p.m. **Closing Remarks and Announcements**
Dr. Raymond Henn, *RW Henn, LLC*
- 6:00 p.m.-8:00 p.m. **Networking Reception at Idaho Springs Visitor Center & Museum**
sponsored by NORMET
2060 Miner Street, Idaho Springs, Colorado 80452
Phone: (303) 567-4382

DAY 3
Wednesday, September 11, 2019

All functions for this day will take place at the following address, unless noted:

ARGO Mill
2350 Riverside Drive
Idaho Springs, Colorado 80452
Phone: (303) 567-2421

- 7:30 a.m.-8:00 a.m. **Course Registration**
Networking Breakfast
Moderator/Speaker Technical Rehearsal
- Beverage Service all Day -**
- 8:00 a.m.-8:45 a.m. **Field Testing Demo (End Beam & Hilti)**
Dr. John Zhang, *LZhang Consulting & Testing Ltd*
Jim Lindsay, *BASF*
- 8:45 a.m.-9:15 a.m. **Dry-Mix Spraying Demo: How to Spray Dry Panel**
Warren Harrison, *Ret.*
- 9:15 a.m.-10:00 a.m. **Wet-Mix Spraying Demo: How to Spray Wet Panel**
Warren Harrison, *Ret.*
- 10:00 a.m.-10:45 a.m. **Demonstration of a Remote Shaft Sprayer**
Kristian Loevlie, *Shotcrete Technologies, Inc.*
- 10:45 a.m.-11:15 a.m. **Lattice Girders Demonstration**
Andrew King, *DSI Tunneling LLC*

11:15 a.m.-Noon	Demonstration of a Remote Shotcrete Sprayer Dan Millette, B.Eng, MBA, <i>MacLean Engineering</i>
Noon-12:15 p.m.	Closing Remarks Dr. Raymond Henn, <i>RW Henn, LLC</i>
12:30 p.m.-1:30 p.m.	Networking Lunch for All Course Attendees <i>sponsored by BASF at Tommy Knockers</i> <i>located at 1401 Miner Street, Idaho Springs, Colorado 80452</i>
1:30 p.m.-2:30 p.m.	<i>Tour of the Underhill Museum for Non-Certification Attendees</i>
1:45 p.m.-5:00 p.m.	EFNARC Certification for Candidates Only Written Examinations TommyKnocker <i>1401 Miner Street, Idaho Springs, Colorado 80452</i>
	Practical Examinations ARGO Mill <i>2350 Riverside Drive</i> <i>Idaho Springs, Colorado 80452</i>

-SAFTETY GEAR IS REQUIRED FOR THOSE TAKING THE EFNARC CERTIFICATION-

Day 4
Thursday, September 12, 2019

8:00 a.m.-5:00 p.m.	EFNARC Certification Practical Assessments for Candidates Only ARGO Mill <i>2350 Riverside Drive</i> <i>Idaho Springs, Colorado 80452</i>
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**Program and Schedule Subject to Change*